VOLUME III JANUARY, 1912 NUMBER 1

THE JOURNAL OF EDUCATIONAL PSYCHOLOGY

THE CLASS EXPERIMENT IN PSYCHOLOGY WITH ADVERTISEMENTS AS MATERIALS.

ROBERT M. YERKES.
Harvard University.

What has come to be known as the "class experiment" is proving to be invaluable in the teaching of psychology. The general method has been admirably described in this Journal by Professor Seashore,[1] with whose views concerning it the writer finds himself in hearty accord. It involves, as Professor Seashore has pointed out, three important points: (1) that each student in the class shall take responsible part, as observer, in the experiment; (2) that the work, unlike that of the "demonstration experiment," shall be sufficiently intensive to be vital in the trainng of the student; and (3) that each step in the experiment, as well as the results, shall be explained and interpreted in the interests of training in observation.

Above all else, the class experiment forces reaction on the part of every student. It demands careful observation and description and the employment of varied methods of dealing with the data of observation. If skillfully used it should serve to arouse interest, and stimulate to serious work students who otherwise would remain passive recipients of psychological information. As a rule the technique of the experiment should be in the hands of the teacher, and it should be the task of each member of the class to observe, record and interpret certain psychological phenomena for the study of which especially favorable conditions are provided by the experiment.

[1]Seashore, C. E., "The Class Experiment," *Journal of Educational Psychology*, 1910, 1: 25-30.

For a number of years the writer has used class experiments, with increasing success, in his introductory courses in psychology, and it is his conviction that a profitable series of experiments may be arranged to supplement lectures or recitations with the expenditure of not more than one dollar per student.

Among the ideally inexpensive and highly satisfactory materials which have been used for class experiments are advertisements. Initial experiments were made with half-page magazine advertisements. Subsequently full-page advertisements were selected from magazines and a set of five (or ten)[2] was prepared for each student. At present our supply is obtained from electro-plates in the Harvard Laboratory. Frequently it is possible to buy for a few dollars a hundred copies of a back number of a popular magazine which contains scores of full-page advertisements that are likely to prove useful for psychological purposes. The necessary cost of providing a set of five or ten is not over ten cents per student.[3]

The writer's purpose in using advertisements with classes in psychology is three-fold. First, to interest students in mental events, and to aid them in observing them. Second, to develop their powers of introspective observation and to teach them to describe accurately and adequately. Third, to give each individual training in the methods of treating data statistically, and of interpreting and presenting them to readers.

Perhaps somewhere in this list should have been included the purpose of revealing certain of the practical relations of the science of psychology to life, for appeals to the practical will arouse and stir to self-developing effort students who otherwise would not discover either psychology or themselves. But it is important that the teacher emphasize the fact that the experiments are not intended primarily to demonstrate or measure the merit of advertisements.[4]

---

[2]A set of five is likely to prove more satisfactory than a set of ten, because of the time requirements of the experiments.

[3]The writer will gladly supply, at the rate of $3 per hundred to teachers desiring them, the set of five advertisements which he now employs.

[4]The value of psychological tests for the estimation of the merit of advertisements has been profitably discussed in a recent monograph which should prove of service alike to advertisers and to psychologists. (Strong, E. K., "The Relative Merits of Advertisements." *Archives of Psychology*, 1911, No. 17.)

The experiments with advertisements which have been employed numbered six.[5] They may be made in class provided a space of at least two square feet on a desk or table is available for each student. The time required is ten to thirty minutes, dependent upon the number of advertisements in the set and the nature of the experiment.

Experiment 1. General Impression Value of Advertisements.

A set of five (or ten) advertisements, numbered at the top from 1 to 5 is delivered in an envelope to each member of the class. Directions are then given to arrange the advertisements in order of diminishing excellence on the basis of a hasty examination of the set, such as one might make in glancing over the pages of a magazine. The procedure should consist in selecting first the advertisement adjudged the best and placing it at the left side of the desk; in selecting second the one adjudged the poorest and placing it at the right side of the desk. Next the second best should be selected and properly placed. Then the second poorest, and so on until the complete set of five, or more has been arranged.

This much having been accomplished, a note-book record of the method, and its results should be made. This may be done by indicating in a vertical column, as in the accompanying table 1, the advertisement (by number), with its place. Briefly and pointedly, the psychological reasons for the given arrangement should be written in the note-book. This should constitute an introspective report of the impression made by each advertisement, and among other things, it should make clear to a reader why a particular order was chosen.

For this experiment the writer has frequently used a set of ten full-page advertisements from the July, 1909, number of the Century Magazine. Each advertisement was trimmed after removal from the magazine and numbered at the top of the page. Ten different articles were advertised, each by the use

[5]Certain of these experiments have been described by the writer in his "Introduction to Psychology." New York: Henry Holt & Co., 1911, pp. 170, 187.

of an illustration and text. The list by number, name, and page in magazine follows:

No. 1. Clicquot Ginger Ale, p. 73.
No. 2. Mott's Plumbing, p. 41.
No. 3. American Telephone, p. 39.
No. 4. Remington Typewriter, p. 65.
No. 5. Swift's Ham and Bacon, p. 75.
No. 6. Shawknit Socks, p. 57.
No. 7. Gold Medal Flour, p. 2.
No. 8. Ericsson Engine, p. 33.
No. 9. Eastman Kodak, p. 51.
No. 10. Winton Six Automobile, p. 61.

TABLE 1.—*Arrangement of Set of Ten Advertisements, According to General Impression Value, Made by Miss C.*

Place.	Advertisements.	Comments.
1 (Best)	No. 2.	An effective advertisement; not overdone. Gives information without intrusion of superfluous matter. This advertisement makes by far the strongest appeal to me, and is, I think, the only one of the ten that might influence me to buy.
2	No. 5.	Ingenuous advertisement, with no apparent attempt to mislead. The picture makes so vivid an impression that were I marketing I should remember the basket of hams—but probably should forget they were *Swift's*.
3	No. 9.	Picture suggests out-of-door pleasures; awakens agreeable associations, and might incline me to think a kodak would be a nice thing to have.
4	No. 1.	Picture of bird or of any animal, except rat or mouse, usually excites my interest. Looking at the eagle, I see what is advertised.
5	No. 6.	Appeals to my liking for comfortable footwear. "Shawknit," however, conveys to my mind no ideas, and the reading of advertisements not being a very exciting entertainment, I should not, ordinarily, look far enough to learn that "Shawknit" means wonderful socks.
6	No. 8.	No special merit, beyond large print and a testimonial (perhaps spurious) from a satisfied customer.
7	No. 10.	Takes too long to reach the point. Before I discover that "Winton Six" is the automobile to buy, I am weary with the history of artificial lighting.
8	No. 3.	Style is inappropriate. Literature, or an account of the nervous system, not called for in a telephone advertisement. Whole thing reflects on one's intelligence and good taste, while it is too obvious that the purpose of the advertisement is to sell the commodity rather than to give accurate information to a prospective purchaser.
9	No. 7.	I have a strong aversion to the use in this way of pictures of men or women. I see no very logical or necessary connection between the faces of women and a brand of flour.
10	No. 4.	The woman obstructs my view of the machine. Advertisement claims too much; I don't believe this is the *only* typewriter worthy the name.

Clicquot (Pronounced CLICK-O) Club Ginger Ale

For thirsty folk in hot weather there is no beverage so satisfying, refreshing and cooling as Ginger Ale. ***Clicquot Club Ginger Ale*** is the one that can be depended upon as being perfectly pure and absolutely free of all preservatives. A healthful, delicious drink. Spicy and snappy in flavor and not too sweet. With just enough sparkle to be beneficial and stimulating to the appetite.

IT IS NON-ASTRINGENT AND KEEPS IN ANY CLIMATE

We also make

Birch Beer **Sarsaparilla** **Blood Orange** **Root Beer** **Lemon Soda**

all of "Clicquot" quality

CLICQUOT CLUB CO. **Millis, Mass., U.S.A.**

FIG. 1.—Advertisement No. 1. One of the poorest of the ten.

Of this set of ten advertisements No. 1, adjudged by most individuals one of the poorest of all, and No. 9 adjudged one of the best, are reproduced in the accompanying figures 1 and 2.

The amount of time required for experiment 1 may be reduced by more than one-half by the employment of five instead of ten advertisements; and the task may be somewhat simplified by the selection of advertisements of the same article. A set of five full-page advertisements of Ingersoll watches, of which two are reproduced in figures 3 and 4, has been used with satisfactory results by the writer.[6] It is difficult to make up such sets from a single number of a magazine, but frequently advertising firms are able and willing to provide them.

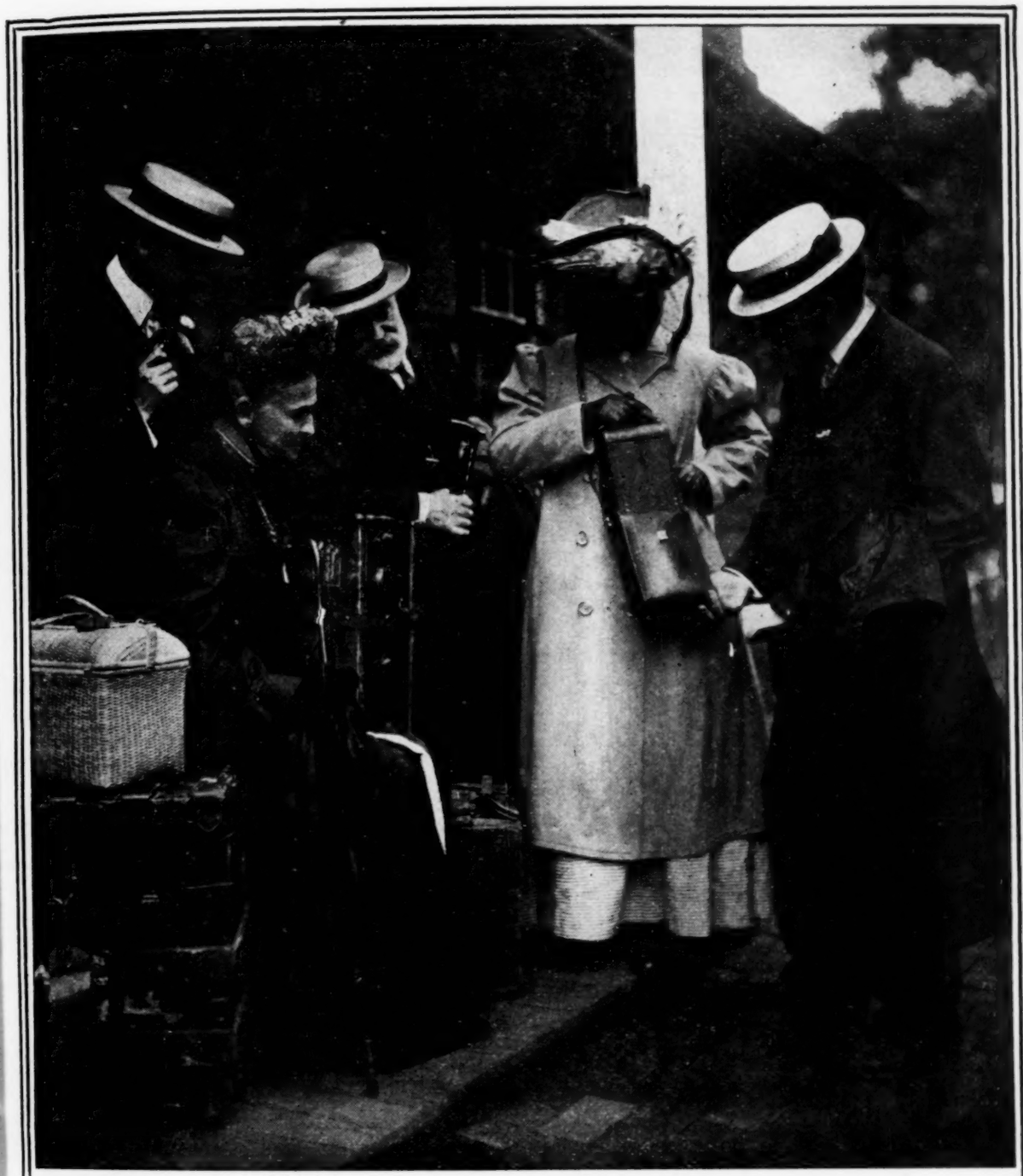
At the end of the class-room exercise of experiment 1 records of the arrangements of the advertisements on a single sheet of paper, bearing the student's name, should be collected and handed to some member of the class for statistical study and report to the class.

In working up the results of the experiment the student may be asked to determine:

(1) The distribution of judgments (occurrences of each advertisement in each place). This is given in table 2 for a class of 20 students and the set of 10 advertisements already described.

(2) The average or class arrangement of the advertisements, as contrasted with the several individual arrangements. There are many ways of determining the average arrangement or order, and the student either may be left to his own devices or given a method, with the suggestion that he improve upon it. Table 2 presents the results obtained by a method of weighting. By this method the first place is given a value of 10; the second place, of 9; the third, of 8, and so on. The value attached to a given advertisement by the class is obtained by getting the sum of the value of each place by the number of occurrences in that place. For example, Adv. No. 9, table 2, was given first place by ten members of a class of 20. Since the weight of this place is 10, the value given to the advertisement by its occurrence in the first place is 10×10, or 100. It

[6] This set also will be supplied to teachers at the rate of $3 per hundred.



THEY *ALL* REMEMBERED THE

KODAK

A vacation *without* a Kodak is a vacation wasted. A Kodak doubles the value of every journey and adds to the pleasure, present and future, of every outing. Take a Kodak with you. ***Kodaks, $5.00 to $100; Brownie Cameras, (They work like Kodaks), $1.00 to $12.00.***

EASTMAN KODAK COMPANY,

Catalogues free at the dealers or by mail.

ROCHESTER, N. Y., ***The Kodak City.***

FIG. 2.—Advertisement No. 9. One of the best of the ten.

was given second place by 1 individual; therefore an additional value of 1×9, or 9. Similarly it was placed in third place by four members of the class (4×8=32). In the fourth place by 3 (3×7=21); in the fifth place by 2 (2×6=12). The sum of these several products of the weight of a given place by the number of occurrences in the place is 174. Had the advertisement been given first place by every member of the class, its value would have been 200. Had it been given last place (tenth) by every member, it would have been 10.

TABLE 2.—*Distribution of Judgments for a Class of Twenty (ten men and ten women) in Experiment 1, General Impression Value. The table gives the number of occurrences of each advertisement in each of the ten places, and the value of each as determined by the method of weighting described on page 6.*

											Value.
Place	1	2	3	4	5	6	7	8	9	10	
Weight	10	9	8	7	6	5	4	3	2	1	
Adv. No. 1	0	0	1	2	2	1	6	4	3	1	
Value	0	0	8	14	12	5	24	12	6	1	82
Adv. No. 2	4	7	2	0	2	2	2	0	1	0	
Value	40	63	16	0	12	10	8	0	2	0	151
Adv. No. 3	1	2	1	3	0	5	3	2	2	1	
Value	10	18	8	21	0	25	12	6	4	1	105
Adv. No. 4	2	1	4	2	8	1	0	0	0	2	
Value	20	9	32	14	48	5	0	0	0	2	130
Adv. No. 5	0	3	2	2	0	6	0	4	2	1	
Value	0	27	16	14	0	30	0	12	4	1	104
Adv. No. 6	2	0	1	1	4	0	1	4	5	2	
Value	20	0	8	7	24	0	4	12	10	2	87
Adv. No. 7	0	4	2	4	1	3	1	1	2	2	
Value	0	36	16	28	6	15	4	3	4	2	114
Adv. No. 8	1	1	1	2	0	1	1	1	2	10	
Value	10	9	8	14	0	5	4	3	4	10	67
Adv. No. 9	10	1	4	3	2	0	0	0	0	0	
Value	100	9	32	21	12	0	0	0	0	0	174
Adv. No. 10	0	1	2	1	1	1	6	4	3	1	
Value	0	9	16	7	6	5	24	12	6	1	86

CLASS, OR AVERAGE, ORDER OR ARRANGEMENT, FROM TABLE 2.

Place.	Adv.	Value.	Place.	Adv.	Value.
1	No. 9	174	6	No. 5	104
2	No. 2	151	7	No. 6	87
3	No. 4	130	8	No. 10	86
4	No. 7	114	9	No. 1	82
5	No. 3	105	10	No. 8	67

(3) The number of departures of the several individual arrangements from the class, or average, arrangement. This may be obtained by comparing each individual arrangement with the average arrangement, noting and taking the sum of the points of disagreement. From table 1 it appears that Miss C. arranged the ten advertisements, according to impression value, from best to poorest as follows: Nos. 2-5-9-1-6-8-10-3-7-4. The average or class order as it is given at the bottom of table 2 reads: Nos. 9-2-4-7-3-5-6-10-1-8. In no instance does Miss C.'s judgment agree with the average. Whereas she placed No. 2 first, the class placed it second. Her judgment may therefore be said to differ from the average by 1 point. She placed No. 5 second, and the class placed it sixth. The departure from the average is 4 points. Comparison of the ten individual judgments with the ten average values gives as the total number of departures from the class order, in the case of Miss C., 34. Another member of the class diverged from the average by only 12 points.

(4) The above statistical results may later, and by another member of the class, be correlated with the introspective reports and with the psychological traits of the members of the class.

Throughout the work it is essential that the instructor emphasize the importance of attending to the psychological phenomena exhibited rather than to the so-called objective values of the advertisements. For the purpose of the experiment is to facilitate introspection, not to reveal or measure the relative values of a number of advertisements.

The writer is in the habit of following experiment 1, either immediately or at intervals determined by the progress of the lectures, by five other experiments which provide for a detailed psychological analysis of the consciousness of the advertisements. Experiment 1, on the general impression value of the materials, serves as a starting point and provides material of interest for comparison with the results of experiments 2 to 6.

The remaining experiments may be described briefly, for they demand procedures very similar to that of experiment 1.

For a Man's Christmas

Is there anything that so delights a man's heart as a fine watch—one that permits him to speak the time with authority? It is dainty and beautiful, as a gift should be, and besides is his most personal and useful possession. For years he carries it wherever he goes. But his satisfaction depends upon it being an exact timer. Among watches there is one, though moderate priced, which has come to be conspicuous for its close timing—accurate as only high-priced watches have been.

The Superior Watch

Ingersoll-Trenton

7 and 15 Jewel Models

$5 to $15

No handsomer watch has ever been made. It will keep time for a generation. Your home jeweler can sell you an Ingersoll-Trenton and he will stand behind it. It is sold at our advertised prices by all who handle it and our price ticket is on each watch.

Go to your own jeweler's and examine it before buying any watch. If, by chance, he hasn't the I-T, we will gladly send the name of one nearby who has. Our booklet, "How to Judge a Watch," is the best explanation of a watch ever written, and is free on request. The $5 Ingersoll-Trenton has 7 genuine jewels and is in a solid nickel case.
The $15 Ingersoll Trenton has 15 jewels and is in a 25 year guaranteed gold-filled case of the highest quality.
Equally accurate models in a variety of I-T cases at $7, $8, $9, $10 and $12.

Robt. H. Ingersoll and Bro. **85 Frankel Bldg., New York**

FIG. 3.—Advertisement No. 3 in Ingersoll Watch set. One of the best in the set.

They deal respectively with attention, perception, feeling, judgment, and memory values.

Experiment 2. Attention Value of Advertisements. The class is directed to arrange the advertisements according to their power to "catch and hold attention." Here, again, introspection should be insisted upon, and it should be made to reveal the essential facts of attention. The advertisements should serve merely as means to this psychological end.

Statistically the results of the attention experiment may be dealt with as were those of the impression experiment. Class discussions of the introspections are very important aids.

Experiment 3. Perception Value of Advertisements. In this experiment the class is required to arrange the set in accordance with degree of definiteness, completeness and intelligibility of the consciousness induced by each advertisement. Many advertisements of high attention value possess low perception value because they do not induce definite, practically complete and intelligible perceptions. They leave in consciousness a more or less unintelligible fragment of information.

Experiment 4. Feeling Value of Advertisements. The materials are to be considered from the point of view of agreeableness. That advertisement which produces the most pleasing effect belongs first; that which produces the least pleasing effect belongs last.

Experiment 5. Judgment Value of Advertisements. The arrangement, in this exercise, should be made in accordance with the convincingness of the materials. Illustration, text and general make-up should be carefully considered. The introspection of the reasoning (thought) processes is especially important.

Experiment 6. Memory Value of Advertisements. Completeness and accuracy of recall constitute the basis of arrangement. The experiment, in satisfactory performance, demands a somewhat different procedure from that of the others. The writer has followed the method of permitting an interval of one or two weeks to elapse, without consideration of the advertisements by the class, and of then setting, as a class-exercise, the task of writing all that can be recalled, within the lim-

"Let Me See One of Those Ingersoll-Trenton Watches!"

JEWELERS throughout the United States are having this said to them across their show-cases by thousands of discriminating watch-buyers, who demand the best watch for the least money. "INGERSOLL-TRENTON!" is the watch-word of the hour.

The *feel* of a fine watch in your pocket is like the feel of a good coat on your back—it gives you a sort of manful confidence in yourself, and when you take your watch out "to see what time it is" it gives others confidence in you, for a good watch is a badge of thrift. It also indicates the personal trait of punctuality, which goes far to compel business success.

The Ingersoll-Trenton watch is a dignified, dependable and durable timepiece. It is finely jeweled and beautifully cased. It is a credit to the person who carries it, being a watch of quality and worth.

And yet you do not have to "give up" a lot of money to own an Ingersoll-Trenton. $5, $7 and $9, in nickel, 10-year gold-filled or 20-year gold-filled cases—*these are the prices* at which we are able to offer these strictly high-grade watches, timed to the minute and fit for the most critical user. No other watchmaker can sell a watch of similar quality at these prices.

Therefore, go to your jeweler and say to him the words at the top of this page.

We also make *Ingersoll* models at $1, $1.50 and $2. 12,000 of them are sold daily, "as time goes on."

Our illustrated fact-book about watchmaking will open your eyes and save you money. Send for a copy. Read it yourself and loan it to your neighbors. It is a good book to have and read and lend.

ROBT. H. INGERSOLL & BRO., 000 Frankel Building New York

A WATCH THAT IS BETTER THAN ITS ADVERTISING

"I have carried my Ingersoll-Trenton one year. It keeps better time than your advertisement said it would. It is absolutely the best watch I have ever seen."

R. T. Chappell,
Kaufman,
Texas.

You can get an Ingersoll-Trenton in any one of 7,000 leading jewelry shops throughout the United States.

RESOLVED

That it isn't necessary for me to pay a big price for an accurate watch when I can get an accurate Ingersoll-Trenton for five, seven or nine dollars.

FIG. 4.—Advertisement No. 2 in the Ingersoll Watch set. One of the poorest in the set.

ited time specified, concerning four aspects of each advertisement.

In this exercise each advertisement is designated, in turn, by the instructor, by its number and a key word. For instance, No. 1, ale; No. 2, plumbing; No. 3, telephone. The directions given are: Recall as accurately and completely as you can, and record the following groups of facts concerning the advertisements.

(1) The exact name of goods and firm. (Time limited to 1 minute.)

(2) Address or source of information or supply. (Time limited to 1 minute.)

(3) Chief points of illustration. (Time limited to 2 minutes.)

(4) Chief points of text. (Time limited to 2 minutes.)

Out of class, the collected results may be evaluated by a member of the class and the rank of each advertisement for the individual, as well as for the class, determined.

Any or all of the detailed analysis experiments, Nos. 2 to 6, may be made either by the method described on page 3, or by the method of systematic comparison now to be described. The latter method is recommended especially for experiment 4, feeling value.

For the method of systematic comparison each student should be provided with a record blank like that which appears, filled in, in table 3.[7] The instructor should briefly explain the experiment by stating that he will, in turn, display each advertisement with each other for an interval of five seconds, at the same time asking the members of the class to decide which one of each pair is the more agreeable, and to record their judgments immediately on the record sheet.

The experimental procedure consists in displaying conspicuously each advertisement, as a "standard," with each of the others as "compared" advertisement. For the judgments which are recorded in the upper half of the blank the "standard" should always be placed on the right of the observer;

[7] These blanks will be supplied to teachers who desire them at the rate of 50 cents per hundred. Orders should state whether the blanks are to be used with sets of five or of ten advertisements, since both five and ten-place blanks are available.

for those of the second half of the blank, it should be on the left. Beginning with No. 1 as the "standard," the instructor should expose it to view for five seconds (not longer) beside No. 2, as the "compared" advertisement, at the same time asking "Is No. 1 more agreeable or less agreeable than No. 2?"

The judgment "more agreeable" may be conveniently indicated in the table by a plus sign (+); the judgment "less agreeable," by a minus sign (—).

In like manner, and in rapid succession, No. 1 should be displayed with each of the other advertisements, then No. 2 should be substituted for No. 1, as the "standard," and displayed in turn with each of the others.

After the upper half of the record sheet has been filled in, it should be hidden from view by being folded under the lower half, and the experiment should be continued with the position of the "standard" changed from the right of the observer to the left. All other conditions of the experiment should remain unchanged.

Table 3 shows the form of the record sheet and it also presents a typical series of judgments. In this experiment Subject A, of table 3, judged No. 1 when compared with No. 2 as the less agreeable (—); when compared with No. 3, as the more agreeable (+), and so on.

At the conclusion of the experiments the record sheets may be collected and delivered to a member of the class for statistical study and report. Each member of the class should write a full introspective report of the experiment. In order that these reports may be fairly detailed and accurate, it is necessary to limit the number of objects to be compared to five or less. A set of ten advertisements, or other objects, requires too large a number of judgments.

The feeling value of an advertisement is measured, in this experiment, by the number of cases in which it is judged to be the more agreeable. Thus, in the series of comparisons recorded in table 3, each advertisement appears 36 times as a member of a pair, and there are, consequently, 36 judgments concerning its agreeableness. Subject A gave the maximum number of favorable judgments (36) in the case of advertisement No. 2, and the minimum number (0) in the case of advertisement No. 6.

TABLE 3.—*Judgments Obtained by the Comparison of Each of Ten Advertisements with Every Other, with Respect to Agreeableness (Feeling Value). The Resulting Order of Agreeableness Appears at the Bottom of the Table.*

Experiments with Advertisements. Name—Subject A (Woman). Date—October 20, 1911. Topic—Feeling Value of Advertisements.

"STANDARD" ADVERTISEMENT ON RIGHT OF OBSERVER.

No. of Adv.	1	2	3	4	5	6	7	8	9	10	Totals (+)	Sums of Totals
1.....		−	+	+	−	+	−	+	−	+	5	10
2.....	+		+	+	+	+	+	+	+	+	9	18
3.....	−	−		−	−	+	−	+	−	+	3	6
4.....	−	−	+		−	+	−	+	−	+	4	8
5.....	+	−	+	+		+	+	+	−	+	7	14
6	−	−	−	−	−		−	−	−	−	0	0
7.....	+	−	+	+	−	+		+	−	+	6	12
8.....	−	−	−	−	−	+	−		−	−	1	2
9.....	+	−	+	+	+	+	+	+		+	8	16
10.....	−	−	−	−	−	+	−	+	−		2	4
Totals (−)	5	9	3	4	7	0	6	1	8	2		90

"STANDARD" ADVERTISEMENT ON LEFT OF OBSERVER.

No. of Adv.	1	2	3	4	5	6	7	8	9	10	Totals (+)	Sums of Totals
1		−	+	+	−	+	−	+	−	+	5	10
2.....	+		+	+	+	+	+	+	+	+	9	18
3.....	−	−		+	−	+	−	+	−	+	4	6
4.....	−	−	+		−	+	−	+	−	+	4	6
5.....	+	−	+	+		+	+	+	−	+	7	15
6.....	−	−	−	−	−		−	−	−	−	0	0
7..... ...	+	−	+	+	−	+		+	−	+	6	12
8.....	−	−	−	−	−	+	−		−	−	1	2
9.....	+	−	+	+	−	+	+	+		+	7	15
10.....	−	−	+	+	−	+	−	+	−		4	6
Totals (−)	5	9	2	2	8	0	6	1	8	2		90

GENERAL RESULTS.

No. of Advertisement.....	1	2	3	4	5	6	7	8	9	10
No. of Judg. in favor.....	20	36	12	14	29	0	24	4	31	10
Order of merit.....	5	1	7	6	3	10	4	9	2	8

Following the table appears the number of judgments in favor of each advertisement, and the arrangement of the set of advertisements in order of diminishing feeling value for Subject A.

The employment of the systematic comparison method in experiment 4 has the advantage of introducing novelty of procedure, of yielding results which are likely to be more reliable than those obtained by means of the "better-worse method" described on page 3, and of permitting comparison of the results of the two methods, in case the instructor finds opportunity to repeat the experiment.

Upon the completion of the six experiments and the filing of the reports by those members of the class selected to make special study of the materials, the instructor may assign to some student the task of determining from the several special reports, the class or average order of the advertisements which results from the combining of the arrangements of experiments 2 to 6. This is readily done by adding the values given to each advertisement in the five experiments. Finally, the class order as obtained in the first, or general impression value, experiment should be compared with the order yielded by the detailed study of the set of advertisements made in experiments 2 to 6.

Throughout these, and similar class experiments, it is necessary that the instructor insist upon faithful introspection, allow much time for the presentation and discussion of introspective reports, and constantly make use of opportunities to illustrate the facts and laws of mental life. The instructor necessarily is a more important factor in the success of such experiments than is the advertisement.

It has been the writer's purpose in this paper to describe briefly certain experimental procedures in class work, not to present the results of the experiments which he has made with his classes. The opportunity is accepted, however, to present the general statistical result of the "impression value" and "detailed analysis" experiments as carried out with three classes, with the same materials and practically identical procedures. The agreement in the three arrangements as given in tables 4 and 5 is marked.

TABLE 4.—*Order of Excellence of Set of Ten Advertisements as Given by the General Impression Value Experiment for Three Classes.*

Class 1. 7 Women. 13 Men. Advertisement.	Value.	Class 2. 10 Women. 10 Men. Advertisement.	Value.	Class 3. 15 Women. 10 Men. Advertisement.	Value.
No. 4	151	No. 9	174	No. 9	201
" 2	147	" 2	151	" 4	181
" 7	146	" 4	130	" 2	178
" 9	138	" 7	114	" 7	168
" 5	125	" 3	105	" 5	154
" 3	118	" 5	104	" 3	152
" 1	93	" 6	87	" 1	110
" 10	71	" 10	86	" 10	109
" 6	59	" 1	82	" 6	73
" 8	52	" 8	67	" 8	49

TABLE 5.—*Order of Excellence of Set of Ten Advertisements as Given by the Averaging of the Arrangements Secured in the Experiments on Attention, Perception, Feeling, Judgment and Memory for the Three Classes of Table 4. The Data of Tables 4 and 5 Are Strictly Comparable.*

Class 1. 7 Women. 13 Men. Advertisement.	Value.	Class 2. 10 Women. 10 Men. Advertisement.	Value.	Class 3. 15 Women. 10 Men. Advertisement.	Value.
No. 4	170	No. 9	158	No. 9	220
" 9	149	" 4	135	" 7	186
" 7	148+	" 2	132	" 2	179
" 2	148	" 7	118	" 4	176
" 5	135	" 5	117	" 5	171
" 3	124	" 3	113	" 3	142
" 1	83	" 10	98	" 10	126
" 6	73	" 6	83	" 1	124
" 10	69	" 1	77	" 6	119
" 8	58	" 8	60	" 8	82

MENTAL FATIGUE IN DAY SCHOOL CHILDREN AS MEASURED BY IMMEDIATE MEMORY. PART I.

W. H. WINCH.

London, England.

SUMMARY.

The chief defect in the measurement of mental fatigue in children by tests of immediate memory has been the irregularity and variation in intellectual work in the early part of a series of new exercises. In the present investigation practice was continued until the pupils' performance became "steady," before the fatigue tests were begun. Tests with a class of forty-five boys, averaging thirteen years of age, showed a relative inefficiency in the work of the late afternoon as compared with that of the early morning. The reduction in efficiency amounted to five or six per cent.

The Problem Stated.

Most of us who are adults are fairly certain, in so far as we can be from introspective evidence, that when we are weary our memories are apt to play us false. We feel, too, when we are tired, that we need to make more effort to remember, and we reproduce what we know more hesitatingly as well as more ineffectively. Especially do we find a difficulty in remembering non-connotative and unrelated names; and our language would probably be more vigorous than rational if, whilst feeling fatigued, we were asked to learn by rote, for purely experimental purposes, a number of meaningless symbols. I need not labor these points; they are probably within the personal experience of every one of us. These considerations induced me to make one more attempt to measure fatigue in children by means of tests in memory; but with no great hope of success, for when we turn to the work of those who have experimented much with children, we find a practical unanimity of opinion that immediate memory tests will not give satisfactory

indices of fatigue.* Why should tests which appear *prima facie* to adults as specially likely to give indications even of small degrees of fatigue fail so hopelessly to indicate fatigue in children? One factor is doubtless the comparative immunity of the child to mental fatigue of a mechanical kind, but probably the most potent factors in the failure of these tests are the irregularities and variations to which intellectual work of this mechanical kind is subject, especially in the first few of a continued series of new exercises. If we could postpone the fatigue tests until the work of the children had become "steady" for that particular sort of exercise, more satisfactory results, I thought, might possibly be obtained. By "steady" I mean that the children in the group do not change places much from test to test. Expressed mathematically "steady" means that there are high positive correlations between the successive tests of the series. I do not mean that each child ceases to improve and henceforward oscillates about a mean which may be regarded definitely as normal work for the particular child. For improvement by practice is the rule and to stand still or retrogress is exceptional. And the practice effects are mingled with the fatigue effects. Thus an immediate memory test on, say, Tuesday morning, may give a lower result than a second one on the following Tuesday afternoon. Are we to conclude that Tuesday afternoon is a better time for memorizing than Tuesday morning? Not unless we find the afternoon results superior *after eliminating the practice effect,* that is the improvement by practice resulting from the work of the previous exercise. I have endeavored to do this by working with two groups, initially equal, and equally practiced. When the work in immediate memory has become steady, I have divided the children who were working the exercises into two equal groups. Then one of the groups has worked further tests in the mornings only, whilst the other group has worked the same tests late in the afternoons. A comparison between the morning results and the afternoon results may indicate the comparative freshness or fatigue of the two groups in the mornings and afternoons respectively.

*"On this point we have the unanimous verdict of Bolton, Ebbinghaus, Schuyten and Smedley." Whipple's *Manual of Mental and Physical Tests,* p. 385.

II. A First Experiment in a Boys' School.

The work was done with the whole of a Standard VI class, numbering 45, of an average age of 13 years, 0 months, on July 31, 1910, in a municipal boys' school situated in a rather poor neighborhood in London. The teacher of the class was a young man of much capacity, enthusiasm and energy; the school, as a whole, was strongly disciplined and the children worked hard.

In such a class it is probable that the boys, except in the intervals for recreation, give their attention to their school work for practically the whole of the school day. In cases like this is should not be hard to find some considerable differences between the best morning work and the worst afternoon work. It is true that the tests of immediate memory in which I am going to make such a comparison are of a mechanical nature, but it must not be forgotten that they are always of new material: the process can be mechanized, but the acquisition required is always a new matter.

i. *Tests and Method of Marking.*

The tests were for memory of visual percepts. Twelve consonants, arranged in the following way:

t	v	d	m
y	f	x	r
b	s	n	c

were exposed to view for 25 seconds, after which the boys wrote down as much as they could remember; 1 minute 35 seconds being allowed for writing and rest. At the end of 2 minutes a second test was given; then, similarly, a third, and so on. Ten tests were given on each occasion, so that the whole exercise lasted just 20 minutes. The boys were required to study the tests visually, audible articulation not being permitted. They were told to let their attention pass from left to right commencing with the top line, and then to the second and third lines, passing through the whole test before beginning a second repetition of any part of it. Three marks were given for each consonant correctly remembered and rightly placed; two, if it were "one place" before or behind its proper position; and

one, if it were "two places" out. It was found helpful to instruct the children to leave a space in the place of any consonant which they *knew they had forgotten.*

ii. *Chronology of the Series.*

Eight sets of preliminary tests were given to afford a basis for the division of the class into two equal groups.

On Wednesday, March 16, 1910, at 9.45 A. M., the first set of tests was given, following immediately upon a Scripture lesson. All the morning tests were given on Wednesdays at the same time, and likewise following immediately after Scripture lessons.

On Friday, March 18, at 4 P. M., a second set of tests was given, following immediately upon a grammar lesson in which the boys are required in this school to do some rather hard thinking. All the Friday tests were begun at 4 P. M. The school periods on Friday afternoons preceding the grammar lesson were occupied with spelling, physical drill, history, recreation.

On Wednesday morning, March 23, a third set of tests was given. The Easter holidays then intervened, but the work was resumed afterwards.

On Friday, April 8; Wednesday, April 13; Friday, April 15; Wednesday, April 20, and Friday, April 22, a fourth, fifth, sixth, seventh and eighth set of tests were given respectively.

On the results of the fifth, sixth, seventh and eighth tests the class was divided into two equal groups.

Henceforward, one of the two groups—Group A—worked memory tests in the morning only, and the other—Group B—worked in the afternoon only. The morning group worked them on Wednesday mornings from 9.45 to 10.05, immediately after a Scripture lesson; the afternoon group on Wednesday afternoons from 4 to 4.20 P. M. The preceding afternoon lessons were spelling and physical drill, recreation and algebra.

It was evident after the first fatigue test that the morning group did better work with the same test than the afternoon group; but it was thought well to continue the tests on succeeding Wednesdays to see if the same relationship was maintained

subsequently. Three fatigue tests were therefore given on April 27, May 4 and May 11, rspectively, to Group A in the mornings and to Group B in the afternoons.

iii. *Results.*

It is not intended to lay any stress on the results of the first, second, third and fourth preliminary tests, nor were the "coefficients of reliability" between them calculated in a rigorous way. It was obvious from an inspection of the figures that the children had not yet taken up a very steady position relative to one another; they had not quite settled down to what, in matters of sport, we should call their "true form." But the fifth preliminary test was correlated with the sixth. Working from the individual cases by the Pearson product-moment formula $r = \frac{\Sigma xy}{n\sigma_1\sigma_2}$, "r" was found to be + .901, with a "probable error" of .02.

The results of the sixth were correlated with those of the seventh, and "r" was found to be + .874, and the correlation between the results of the seventh and eighth was found to be + .884, with "probable errors" also approximating to .02.

I had now great hopes, if I divided the class into two equal groups on the results of these four sets of tests which correlated so highly, that I should obtain two groups which would be obviously sensitive to variations in the conditions as to freshness and fatigue with which the work was done. Two boys had 'left school' during the tests and one boy was omitted because he could not be paired.

The actual results of tests 5, 6, 7 and 8 were as follows:

Test	5.	Average mark	237.6.	M. V.	30.7.
"	6.	" "	234.6.	"	30.3.
"	7.	" "	239.7.	"	30.7.
"	8.	" "	251.5.	"	34.4.

Tests 5 and 7, will be remembered, were Wednesday morning tests, and tests 6 and 8 were Friday afternoon tests.

Two equal groups were then formed on the results of these four tests cited above; 21 boys were placed in each group and the groups were subdivided into sections, thus.

TABLE I, *Showing the Division Into Two Equal Groups.*

Av. marks per test in preliminary tests.	Group A. No. of boys.	Group A. Av. mark per boy per test in four prelim'y tests.	Group A. M. V.	Group B. No. of boys.	Group B. Av. mark per boy per test in four prelim'y tests.	Group B. M. V.
Over 280	4	300.2	11.9	4	298.7	15.7
240 to 280	5	256.7	10.1	5	259.1	9.5
200 to 240	9	222.5	9.8	9	222.4	9.4
160 to 200	3	189.9	8.0	3	188.8	8.4

Taking Group A and Group B as wholes, the former had an average mark in these four preliminary tests of 240.9 (mean variation 30.2), and the latter average mark of 240.9 (mean variation 30.6).

It now remains to present the results of the work of these two groups when Group A continued the tests in the mornings only and Group B continued them in the afternoons only.

I present at first the results in gross.

TABLE II, *Showing the Comparative Results of Groups A and B in the Morning and Afternoon Work, Respectively.*

Date.	Group A—(Morning). Total marks.	Group A—(Morning). Av. mark per boy.	Group A—(Morning). M. V.	Group B—(Afternoon). Total marks.	Group B—(Afternoon). Av. mark per boy.	Group B—(Afternoon). M. V.
27/4/'10.....	5375	256.0	40.1	5172	246.3	36.9
4/5/'10.....	5631	268.1	33.3	5283	251.6	40.4
11/5/'10.....	5812	276.8	32.5	5548	264.2	37.1

In the first week the morning group improved on its record in the preliminary tests to the extent of 6.26 per cent., calculated as a percentage on the average of the four preliminary tests; in the second week 11.3 per cent., and in the third week 14.9 per cent.; whilst the afternoon group improved on its preliminary record in the first week 2.2 per cent., in the second week 4.4 per cent., and in the third week 9.6 per cent. It seems clear that, though improvement by practice is still obvious in both groups, Group A is improving faster than Group B. The difference is taken as a measure of the difference in mental energy for this sort of work at 9.45 in the morning and 4 in the afternoon of a mid-week day, after the lessons specified in the chronological account of the experiment. On the assumption that both groups would have shown approximately equal practice effects had they continued the work under equal conditions, the decreased improvement in the results of the afternoon work as compard with the morning work is regarded as a measure

of fatigue. But it remains to be shown whether this relationship holds for the corresponding sections into which the groups are divided.

TABLE III, *Showing the Comparative Results of Groups A and B, Section by Section.*

Av. mark in preliminary tests.	Group A. No. of boys.	Av. per boy—Fatigue tests. 1st.	2d.	3d.	Group B. No. of boys.	Av. per boy—Fatigue tests. 1st.	2d.	3d.
Over 280	4	319.5	323.5	325.2	4	329.2	335.0	344.0
" 240	5	284.8	283.4	294.2	5	247.2	259.0	272.4
" 200	9	230.1	249.3	259.5	9	225.8	221.8	235.9
" 160	3	200.7	225.3	234.7	3	195.7	217.3	229.0

Improvement is obviously the rule, as the averages of the whole group seemed to show. But the division of the groups into sections indicates that the afternoon workers in every section but the best do worse work in the afternoon than the corresponding sections in the morning. The general falling off of the afternoon workers is, of course, a result which might have been expected; but I was not prepared to find that *any* section of school boys of this age and mental level would do *better* work in the afternon than another corresponding section would do in the morning. This result is not due to some astonishing and quite abnormal work on the part of one individual, for every boy in this section of the afternoon group has beaten the corresponding boy in the corresponding section of the morning group. May it be that the chilren strongly endowed in the natural function tested show rather the stimulating effect of the day's school work than its fatiguing effect? I append the figures:

TABLE IV, *Showing the Individual Work of the Top Four Boys in Groups A and B Compared.*

First Section—Group A. Name. (Initials only.)	Av. mark four prelim'y tests.	Av. mark three final tests.	First Section—Group B. Name. (Initials only.)	Av. mark four prelim'y tests.	Av. mark three final tests.
E. L.	320	333	C. M.	326	347
H. W.	304	320	A. S.	302	344
L. A.	296	311	W. B.	284	319
C. A.	281	326	H. B.	282	334

After those of the top sections, however, the results for the afternoon work as compared with the morning work tend steadily downwards, and in no other *section* does the work of the afternoon group excel that of the corresponding *section*

which works in the morning. But there are individual pupils lower down in Group B who reach higher results in the afternoon work than corresponding pupils in Group A—the morning group—so that the suggestion made above to account for the superiority of the upper section of the afternoon workers at once appears doubtful. I propose, finally, to show the comparative improvements of the individual pupils in Group A and Group B in the morning and afternoon work respectively. The improvements are calculated on the average of the four preliminary tests on which the class was divided. The averages and percentages are calculated to the nearest unit only.

TABLE V, *Showing the Comparative Improvement of the Pupils in Groups A and B in the Morning and Afternoon Work, Respectively.*

Group A.				Group B.			
Name. (Initials only.)	Av. of four prelim'y tests.	Av. of three final tests.	Percentage of improvement.	Name. (Initials only.)	Av. of four prelim'y tests.	Av. of three final tests.	Percentage of improvement.
L. F.....	321	333	+ 4	N. C.....	327	347	+ 6
W. H.....	304	320	+ 5	S. A.....	302	344	+14
A. L.....	296	311	+ 5	B. W.....	284	319	+12
A. C.....	281	326	+16	B. H.....	282	334	+18
S. J.....	274	333	+22	W. W.....	278	283	+ 2
B. W.....	265	297	+12	M. R.....	262	264	+ 1
M. V.....	257	286	+11	A. W.....	261	259	— 1
D. S.....	245	234	— 4	C. W.....	249	235	— 6
A. H.....	243	287	+18	L. W.....	245	257	+ 5
W. V.....	238	264	+11	M. C.....	237	256	+ 8
I. W.....	233	244	+ 5	K. H.....	234	251	+ 7
D. C.....	231	271	+17	W. W.....	229	221	— 3
H. F.....	229	255	+11	F. T.....	229	246	+ 7
A. H.....	227	238	+ 5	K. G.....	225	253	+12
B. W.....	220	232	+ 5	P. G.....	223	237	+ 6
S. C.....	219	244	+11	O. G.....	217	213	— 2
A. F.....	205	238	+16	C. G.....	207	184	—11
F. W.....	202	231	+14	C. J.....	202	189	— 6
W. H.....	196	222	+13	K. F.....	197	223	+13
H. H.....	196	219	+12	P. T.....	194	199	+ 3
J. A.....	178	219	+23	B. A.....	176	219	+24
	5060	5304			5060	5333	
Averages.	240.9	266.7		Averages.	240.9	253.0	
M. V.....	30.2	34.5		M. V.....	30.6	35.9	

On inspection of the above table we find in the morning group 1 case only in which a positive improvement is not shown; in the afternoon group there are 6 cases. In the morning group there are 2 cases showing an improvement of 20 per cent. and over as compared with 1 case in the afternoon group;

there are four cases which show an improvement of 15 to 20 per cent. as against 1 case in the afternoon work; there are 8 cases between 10 and 15 per cent. as against 4 cases in the afternoon group; there are 5 cases which show an improvement between 5 and 10 per cent., as compared with 6 in the afternoon group; and there is 1 case between 0 and 5 per cent., as compared with 3 in Group B. These results are more clearly exhibited in the following table:

TABLE VI, *Showing the Comparative Percentages of Improvement Between the Members of Group A and Those of Group B.*

	Number of Cases.	
	Group A. Morning Group.	Group B. Afternoon Group.
Gain of 20% and over	2	1
Gain of 15% to 20%	4	1
Gain of 10% to 15%	8	4
Gain of 5% to 10%	5	6
Gain of 0% to 5%	1	3
Loss of 0% to 5%	1	3
Loss of 5% to 10%	0	2
Loss of 10% and over	0	1

The correlation of the results of the four preliminary tests between the corresponding cases of the two groups, A and B, worked out by means of rank formulæ, is, of course, positive 1. In the work of the final tests the A group series correlates with the B group series to the extent of + .87. This estimation was made by means of the Pearson rank formula

$$\rho = 1 - \frac{\Sigma d^2}{n(n^2-1)}$$

If we are entitled to suppose that Group B, if it had worked in the mornings, would have made as much improvement as Group A we can regard the extent to which it failed to do so as a fatigue effect. The "morning group" improves 10.7 per cent. from the preliminary to the final tests; whilst the "afternoon group" improves 5.0 per cent. from the preliminary to the final tests. For a class of boys of this age and mental level therefore, the fatigue effect thus calculated appears to be between 5 and 6 per cent. These results are not exposed to the dangers arising from the effects of novelty. Every boy whose work is here shown has worked no less than 110 memory tests

in 11 sets, spread over a period of some 8 weeks. A more serious difficulty—one which specially attacks long series—is that of boredom. I am not quite sure whether boredom may not be very closely related to fatigue for a particular function, especially if it be one in which we were formerly interested and in which we showed improvement. But assuming for the present that it is not, namely, that we *can* work without "objective fatigue," though the work bores us, will the assumption of boredom affect the conclusion drawn as to fatigue? I think not; unless we believe that the morning groups and afternoon groups are likely to be affected by this factor to a different extent.

III. Summarized Conclusions.

1. The use of immediate memory tests shows, in a normal group of school children constituting the whole of a class or grade, a certain amount of relative inefficiency in the late afternoon as compared with early morning work. This relative inefficiency is taken as a measure of fatigue. For children at this age and mental status it does not appear to be great for work of this kind, and is probably about 5 or 6 per cent.

2. One of the pupils in the morning group and six of the pupils in the afternoon group cease to improve, begin to oscillate in their work, and tend on the whole downwards. If this is not due to boredom (I have argued previously that it is not likely to be) it is an indication that these pupils are being generally overworked, or have reached their saturation point for the function in question. With about one-third of Group B the work done late in the afternoon has been futile.

. As a pedagogical conclusion, we might accept the following dictum: Wherever, under first-rate teachers and with earnest work on the part of the children, a series of exercises begins to produce a steady decline in improvement, it is an indication to us of the advisability of lightening the general work or of a cessation of those exercises, at least temporarily, until the children's reparative activities have had time to produce their proper effect. If this dictum be accepted it could be applied to discover the best age and time for starting new sub-

jects and parts of subjects in the school curriculum. For example, when should a child begin problematic arithmetic? I suggest when, with earnest work and first-rate teaching, improvement is shown generally from exercise to exercise, and not otherwise. Such a criterion would also serve to regulate the adjustment of the intervals between the successive lessons.

(Part II will appear in the February number.)

PROBLEMS IN THE EXPERIMENTAL PEDAGOGY OF ELEMENTARY AGRICULTURE.

GARLAND A. BRICKER.
Assistant Professor in Agricultural Education, Ohio State University.

Elementary agriculture as a school subject is so young that one of the most difficult problems confronts us when we undertake to define its field. Both the content and the place in the program of studies of a school subject should be known before the formulation of its pedagogy is attempted. The first problem, then, in teaching elementary agriculture is to determine what portions—facts, principles, laws, and their applications—of this great subject may, with profit to the child and the race, be taught in the elementary school.

The time was, less than a century ago, when practically no science of agriculture existed, although the art of agriculture is perhaps the most ancient. In America, the passage of the Morrill Act by Congress in 1862 laid the foundation for the building of a great science of agriculture; and through the application of its principles to the production of food, clothing and shelter for man, or to the satisfying of his esthetic desires, the most ancient art of agriculture has been transformed. When these land-grant colleges began their work, many of the things which they taught were quite elementary. As agricultural investigations bore fruit, and new discoveries were formulated into principles, the body of subject matter gradually grew until there came to be a great mass of agricultural information that was available for teaching. With the rise of the agricultural high schools, and the introduction of the subject of agriculture into the regular American secondary school, at the beginning of the present century, much of the agricultural information that was considered elementary and secondary was handed over to these new schools and courses for instructional purposes. Now, as the elementary and rural schools of

the country are beginning to teach agriculture, a new division of the subject matter is being made, and certain phases of agriculture on the one hand and of nature study on the other, are being formulated for use in elementary instruction. Just what these phases should be has not yet been definitely settled. However, a beginning is being made, and a few elemental and fundamental facts, principles, laws, and practices of agriculture are coming to be generally used. This instructional matter must meet at least three requirements: on the side of the home, the instruction should result in some immediate economic benefit, and in giving the boy an intelligent desire for farm life; from the side of the school, the boy should be prepared for continuing the agricultural work of the high school; and from the standpoint of the pupil himself, the matter of instruction should be adapted to his nature and capacity. To ignore any of these factors, must, at the present time, result disastrously to any portion of the subject the presence of which may be desired in the elementary or rural schools.

The National Education Association Committee on Industrial Education in Schools for Rural Communities recommended in 1905 that agriculture be taught in the upper grammar grades, indicating especially the seventh and eighth grades, and possibly the sixth grade also.[1] The wisdom of this recommendation is becoming more apparent as the years pass by. Yet, attempts are being made in some quarters to introduce the teaching of elementary agriculture into all the grades of the elementary school. There is a possibility that such a procedure will be justified; the probability of its eventually succeeding is, however, seriously questioned, the error arising from the neglect to differentiate between agricultural nature-study and elementary agriculture.

A very comprehensive problem is the matter of determining by experimental methods whether or not the principles of our present-day pedagogy, which have been evolved through the medium of the older school subjects, hold equally true when applied to this new field of semi-vocational-cultural training. If some modifications are necessary, just what are they and how shall they be accomplished?

---

[1]See the "Report of the Committee on Industrial Education in Schools for Rural Communities" of the National Educational Association, pp. 44-46.

MICHIGAN STATE NORMAL COLLEGE
TRAINING SCHOOL DEPARTMENT.

The teaching of agriculture is largely a synthetic process, instead of analytic. We teach how to raise corn instead of teaching how it was raised. There are those who insist that the pupil should first go through the experience of certain agricultural operations before he be given the opportunity of studying the scientific aspect of these methods. He must raise some corn before studying its culture. The claim is that the pupil should first have the experience of applied science, so that when he shall later study the scientific principles involved, he shall understand their significance more fully. This method would be the applied science approach carried to the extreme. On the other hand, it is argued that the methods of agriculture—the raising of corn, for example—which are taught to elementary school pupils should be only such as have been thoroughly tested by practical agriculturists. It is, therefore, not essential that the pupil shall first raise a plot of corn before he shall study about the raising of corn. If the pupil shall have had such experience at home, or the opportunity of acquainting himself with the various phases of corn raising by observation, such experience is not to be despised.

In accordance with the latter plan, which, at the present time seems the more promising of success, the pupil is taught the elementary principles of agriculture throughout the school year, and near its close he is given the opportunity of applying his agricultural knowledge in a school garden, or home garden or field, which ever the case may be. This practical work should be carried forward during the following summer, if posible, under the supervision of a competent teacher. The pupil's past training will give him weapons with which to attack agricultural problems as they shall arise in connection with this practical work. He now applies his science intelligently.

We still have the pure science and the applied science, or the economic, methods of approach. In the former, the pupil is encouraged to learn the facts, principles, and laws of science for their own sake, while in the latter he is appealed to by the economic applications to which these may be put. The former is the method that has been universally used in our schools in

the past; but it has been pointed out,[2] and seemingly proved that the economic method of approach is superior when considered by the test of results.[3] Of course we need further tests of this problem, especially on a large scale and under the normal conditions of the pupils in their local home communities with all the usual community and public school factors in full operation. The work might well be carried out with botany and that part of agriculture that deals with plants. Either spring or autumn might be selected as the time of year. One hundred schools, more or less, should be selected and paired off so that the schools of each pair would have very similar conditions of environment, community, local factors, equipments, teachers, number of pupils, races, etc. In one school of each pair, the pupils should study elementary botany via the pure science approach; in the other school, elementary agriculture by the economic-applied science approach. The topics of study should be the same in both cases. After a certain period, results from all the schools should be compared. The work should first be outlined and subsequently supervised by two persons—one versed in methods as applied to teaching elementary botany and the other in methods as applied to teaching elementary agriculture. The teachers should first have general and specific instructions with reference to the purpose of the experiment, the work to be presented, and the methods of instruction. The examinations for all pupils should be of two kinds, one part on the basis of pure science, and the other on the economic or applied science basis. The results of these examinations should be passed upon by the two supervisors in charge. This would be a very elaborate and extended piece of work, but it would doubtless yield significant results.

Another educational problem, both administrative and pedagogical, concerns itself with the selection, organization, and teaching of a series of type habits associated with approved agricultural practice. "Previously acquired habits very fun-

[2]Hall, G. Stanley: "Adolescence," Vol. II, pp. 153, 156-157. Appleton, New York, 1905.

[3]See the report of the experiment of J. P. Gilbert with pure and applied science methods of approach in secondary school science. THE JOURNAL OF EDUCATIONAL PSYCHOLOGY, Vol. I, pp. 321-330.

damentally influence future acts. Habits are stable and lasting to a degree quite equal to that of instincts and far greater than that of ideas. If ideas and instincts are sufficiently important to be considered as determining factors in the organization of teaching materials, we see no reason why habits should not also be so admitted.''[4] Two objects should guide in the selection of this proposed course of habits; namely, preparation for the high school course, in ''agricultural'' habits, and preparation for making successful adjustments to the common and elementary conditions of farm life. ''In the present status of habit training in the elementary school, pupils enter the high school without any adequate uniformity in the automatisms that they have acquired. It is true that a class of pupils often do posess many automatisms in common, but until greater progress is made in systematic habit training in the elementary school, the high school must content itself with using such automatisms as its pupils have incidentally acquired or assume the responsibility of first developing those habits that it wishes to make use of in later instruction.''[5] The selection of any program of habits must never lose sight of their practical usefulness in securing immediate and serviceable adjustments to farm environments and rural life. There are many conditions in rural life to the stumuli of which country children should respond with definite automatic reactions. Habits of doing certain things at given times are absolutely essential in successful farming. The habits of selecting seed corn in autumn; of harvesting at the proper time; of storing grain properly; of grafting, mending tools, and doing other things that may be scheduled for the season of least activity; of cleanliness in milking; of testing the vitality of seeds; of starting early plants on time; of plowing when the season permits; of cultivating when the conditions require; of cutting cion and stock quickly and accurately so that the two parts of the graft will fit together nicely—these are only a few of the habits that should be established in the life activities of every successful farmer. Although the teaching of all these various

[4] Bricker, G. A.: "The Teaching of Agriculture in the High School," p. 90. The Macmillan Company, New York, 1911.

[5] Ibid.

activities may not lie within the province of the elementary school, yet their enumeration will serve to give a conception of what is needed in the matter of habit formation. A series of type laboratory and field exercises should be planned with the object of furnishing the means of forming habits that the stimuli of farm life will tend to set in operation. These types should have an element of commonness with conditions that the pupil will likely meet on the farm. This common element in the situation of the farm life and the school training will suggest the use of certain habits previously learned at school; hence, the use of type practicums in developing skill in agricultural art. It is the element of commonness that gives the cue. There is at present great need for such a systematized series of exercises for the laboratory and field work of elementary agriculture.

Some of the most important pedagogical problems of elementary agriculture, then, are summarized by the following list of questions: 1. What portions of the subject of agriculture are adaptable for use in the elementary school? 2. In what grade or grades of the elementary school shall elementary agriculture be taught? 3. Are the principles of our present-day pedagogy applicable to the efficient teaching of elementary agriculture? 4. Shall experience in practical agricultural methods precede the study of the scientific principles involved, or shall the facts and principles be first studied, to be followed by their practical application? 5. Which gives the better scholastic and practical results, the pure science, or the economic-applied science method of approach? 6. Is it feasible to organize and teach a series of "agricultural" habits in the elementary school? There are only two ways by which correct and reliable answers to these questions may be secured; either by long and costly experience, or by immediate experimental methods.

COMMUNICATIONS AND DISCUSSIONS.

SPEECH DEFECTS AND INTELLECTUAL PROGRESS.

Speech defects usually date from very early childhood, so early that generally the origins go back beyond the patient's memory. Therefore this malady may be classed amongst children's diseases. And, though, like other disturbances of childhood, it may sometimes tend to a natural cure as the child grows up to maturity, a great many children do not outgrow the defect without help and, moreover, the disturbance runs through so many years of a child's life that often severe and permanent injury is done before a natural cure works itself out unaided.

From statistics gathered by the writer several years ago there are nearly half a million children with defective speech in our schools. That stuttering and stammering do not necessarily imply mental weakness is admitted probably by all who have given attention to the subject, yet a child's intellectual development may be seriously, and often permanently, impaired by defective speech. Such children usually are sensitive to the ridicule of their companions and classmates and hence are slow to express themselves. They withdraw within themselves and hence do not develop that healthy alertness and self-expression so necessary for vigorous and symmetrical mental growth.

Since the number of stammering and stuttering children is so large, it is a problem of serious import to guard the intellectual welfare of these unfortunates. The following data were collected with a view toward throwing some light on the relation between speech defects and mental progress. It is indeed difficult to measure a child's intellectual capacity or intellectual progress, yet the data at hand suggest some valuable inferences.

Though the opinion of parents is not scientific evidence, it is nevertheless interesting to note that H. Gutzmann in his long and extensive experience finds that 10 per cent. of the parents of 800 stuttering children admitted without being asked that the speech defect caused their children to be behind in school. He says that he has often found that children will remain two or three years in the first grade on account of stuttering, but when speech was cured they de-

veloped rapidly and not only kept pace with their class at the time of cure, but caught up what they had lost. He holds that at the age of three, four and five years something may be done toward a cure, but at a later age something must be done if the child is not to suffer severely in its intellectual development.

Westergaard made an investigation amongst 34,000 school children in Denmark. Of these 790 had defective speech. He says, assuming 100 in a class, the stuttering children had an average place of 55; those who nasalized, 60; those who stammered, 67; those who lisped, 61; (place 1 being the head of the class and 100 the foot). It will be seen from these figures that children with defective speech are in the lower half of the class. As to the average age of normal children and of children with defective speech in the different grades he gives the following figures: (Grades are numbered according to American conditions.)

	Grades.	1.	2.	3.	4.	5.	6.
a.	Average age of all children.....	6.8	8.1	9.3	10.5	11.7	12.3
b.	" " " " stutterers	7.3	8.5	9.8	11.4	11.7	12.7
c.	" " " " nasalizers	7.1	8.7	9.9	11.5	12.0	12.5
d.	" " " " stammerers	7.1	8.8	10.1	11.6	11.9	12.5
e.	" " " " lispers	7.4	8.8	10.2	11.7	12.4	12.4
f.	" " " " b, c, d and e...	7.2	8.7	10.0	11.5	12.0	12.5

Comparing the average (f) with the average (a) we see that, throughout, the average age of children with speech defects is higher for the respective grades than the age of *all* the children.

An investigation made among 601 children with speech defects in the schools of Hamburg, Germany, shows that they are not promoted regularly, that is, they fall behind in their grades. The majority seem to be a year behind in their classes; in their fourth school year about 50 per cent. are below the fourth grade, in their fifth school year 65 per cent. are below the fifth grade, in their sixth school year about 77 per cent. are below the sixth grade, and in their seventh school year about 80 per cent. are below the seventh grade. Many of them lag way behind. In the sixth school year, for instance, nearly 16 per cent. are below the fourth grade, and in the seventh school year nearly 20 per cent. are below the fifth grade. In the eighth school year those that straggle far behind have almost all dropped out, and in the ninth school year practically all have dropped out, only two remaining, one in the fourth grade and one in the fifth grade.

In my recent investigation amongst 87,440 school children in six American cities, I found the following average age amongst the stutterers in the different grades:

TABLE I.

Grade	1	2	3	4	5	6	7	8
Average age	7.1	8.2	9.7	10.9	11.9	12.9	13.3	14.6

I have data as to the average age by grades of all school children in three cities, namely, Milwaukee, Springfield, Mass., and Cleveland, Ohio, from which some of the above data were obtained. The ages are as follows:

TABLE II.—*Springfield.*

Grade	1	2	3	4	5	6	7	8
Average age	6.4	7.5	9.4	10.1	11.3	12.2	13.2	13.11

TABLE III.—*Cleveland.*

Grade	1	2	3	4	5	6	7	8
Average age	6.5	7.9	9.0	10.3	11.2	12.1	12.9	13.6

TABLE IV.—*Milwaukee.*

Grade	1	2	3	4	5	6	7	8
Average age	6.6	8.1	9.0	10.2	11.3	12.2	13.2	14.2

Comparing the figures in tables II, III and IV with those of table I, we see that in every case the age of the stutterer is higher. Even though it may be difficult to measure the intellectual ability of a child, yet when we find that children with speech defects as a class are uniformly behind in their school work we may assume that their inferiority is in some way connected with their affliction. We should remember that such children are behind probably not on account of any mental inferiority, but, either because they are neglected by their teachers, or because they are discouraged on account of a sensitiveness with regard to their trouble or on account of the jeering of their classmates. Whichever of these causes may be operative, however, the fundamental condition is the defect of speech, and with the removal of that normal intellectual development becomes possible.

Stuttering is often accompanied by great psychic depression, usually due to the mockery to which the child or the youth is exposed. This depression interferes seriously with proper mental development; it is indeed sometimes so severe that it leads to suicide. This is especially true if the disturbance of speech persists up to the age of

adolescence. A number of cases of suicide are on record as due to this cause.

Tallahassee, Fla. EDWARD CONRADI, PH.D.

THE NEW YORK STATE TEACHERS' ASSOCIATION.

The sixty-sixth annual meeting of the New York State Teachers' Association, in conjunction with affiliated associations—State English Teachers' Association, Modern Language Association, State Science Teachers' Asociation and New York State Association of Elocutionists—was held in Albany, November 27-29, and was an unqualified success. Up to this year meetings have been held in the summer vacation or in the Christmas vacation and with considerable dissatisfaction. The present plan, which will be doubtless continued, takes the entire time of two days on which the schools are normally in session. The school authorities in neighboring cities closed their schools entirely and in cities and towns over the state generally (with the exception of New York city) excused teachers who wished to attend. As a result, instead of the anticipated 1500, nearer 5000 teachers were in attendance. In every meeting "standing room only" might have been displayed.

Among the notable addresses were those of Rev. William B. Forbush on "Boys and Books,", of Commissioner Draper on "The Necessary Basis of a Teacher's Tenure," of Rev. Lyman Abbott on "Education in a Democracy," of Supt. O. J. Kern on "Nature Study Agriculture" and "The Front Line of Country School Improvement," and of Prof. C. F. Hodge on "Civic Biology." The meetings of the association proper divided into fourteen sections—Normal and Training Class, Elementary Schools, Arts and Industrial Training, Home Economics, Commercial Teachers, Sub-Normal and Backward Children, Library, Music Teachers, Kindergarten Teachers, History Teachers, Mathematics Teachers, Classical Teachers, Rural Education, and Hygiene and Physical Education. In the well-attended meeting of the Sub-Normal and Backward Children Section, Miss Elizabeth Farrell, Inspector of Ungraded Classes, New York city, presided and outlined the work of the section in a vigorous and enthusiastic address. Dr. Isabelle Smart, Medical Examiner, New York City, gave an account, with many impressive statistics, of her work in the examination of sub-normal children. Miss Grace M. Böhne, Director of the Rochester Child Study Laboratory, discussed the

principles of the organization of classes for defectives, and Dr. Anne Moore, in treating the topic "The Next Step in Work for Sub-Normal Children," reported some striking results of her investigation of the sociological status of the feeble-minded. The ensuing discussion was opened by Helen M. Hamilton, Director Special Classes, Jersey City.

Perhaps the most notable feature of the whole session was the definite stand taken by Commisioner Draper in favor of such a legal tenure of office for every school teacher and officer in the state that no one might be removed from office, save in accordance with law and from a cause specifically stated in writing.

The next annual meeting will be held at Buffalo under the presidency of Dr. Percy I. Bugbee of the Oneonta Normal School.

G. M. W.

NEW YORK BRANCH OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION.

At the meeting of the New York Branch of the American Psychological Association, on Monday, November 27, the following program was presented:

AFTERNOON SESSION.

MR. D. O. LYON.—*The Relation of Quickness of Learning to Retentiveness.*—In working with tests of memory of digits, prose and poetry, Mr. Lyon found by no means perfect correlation between them. He found the quick learners the best retainers for prose and poetry, but the reverse in the case of digits.

PROF. S. S. COLVIN.—*Investigations in Progress in the Psychological Laboratory of the University of Illinois.*—In an extended investigation on transfer in learning, geometrical figures were drawn more accurately after practice, but less quickly.

In learning nonsense syllables, it seemed to make no difference in speed of learning whether all were given at one period, in two periods, or divided into four periods.

In studying the effect of aids and hindrances in learning, it was found that children learn best when they are not required to keep perfectly still, and that below the sixth grade writing the words is a hindrance instead of a help in learning to spell.

The size of children's vocabularies on entering school was found to be considerably larger than one would think.

The optimal illumination for judging certain lengths was found to be not so much a problem in psycho-physics as a matter of attention.

DR. HOLLINGSWORTH.—*The Action of Pharmacological Agents as an Aid in the Classification of Mental Processes.*—Caffein hinders certain mental processes as measured by records made in mental tests, and stimulates other mental processes. On this basis the color-naming, calculating and opposites tests fall together in one class, typewriting and the target test belong together in another class.

MR. J. W. TODD.—*Reaction to Simultaneous Stimuli.*—The reaction time to two simultaneous stimuli was shorter than to either alone, and to three simultaneous stimuli shorter than to either two alone.

EVENING SESSION.

MR. D. E. RICE.—*Visual Acuity Under Lights of Different Colors.*—Mr. Rice spoke of the conflicting results previously secured in this field of research, and of the difficulty he had experienced in getting a satisfactory method of procedure.

He found that for visual acuity in the sense of ability to distinguish form, when light is reflected from the form, red light is better than green, and green is better than blue. This is for objects near the eye. Where the visual stimulus is distant, green light is better than red.

MR. A. T. POFFENBERGER.—*Reaction Time for Different Retinal Areas.*—Reaction time is quickest in case of stimulation at the fovea, and quicker for stimulation on the nasal side of the retina than on the temporal side.

PROF. R. S. WOODWORTH.—*Correlation of Association Tests.*—Evidence was presented to show that a number of association tests had recently been improved so as to make them considerably more reliable as tests. The Pearson coefficient of correlation had been worked out for such tests as easy opposites, color naming, addition, and several varieties of the genus-species test. The average correlation between any one test and any other, for the thirteen subjects used, was .57. The correlation between adding and subtracting was .91. Many correlations were very high.

MR. G. C. MEYERS.—*Experiments on Incidental Memory.*—Different classes of persons—bankers, business men, college girls, rural people—all showed inaccuracy in estimating the size of familiar coins and of one dollar and five dollar bills.

B. R. SIMPSON.

Brooklyn Training School for Teachers.

ABSTRACTS AND REVIEWS.

RECENT STUDIES IN HANDWRITING.

MARY E. THOMPSON, A.M., Ph.D. *Psychology and Pedagogy of Writing. A Résumé of the Researches and Experiments Bearing on the History and Pedagogy of Writing.* Baltimore: Warwick & York, Inc., 1911. Pp. 128. $1.25.

EDWARD L. THORNDIKE. *Handwriting.* Teachers' College Record, Vol. II: No. 2, March, 1910. Pp. 93. 30 cents.

G. M. WILSON. *The Handwriting of School Children.* Elementary School Teacher, 11: No. 10, June, 1911. Pp. 540-543.

FRANK N. FREEMAN. *Some Issues in the Teaching of Handwriting.* Elementary School Teacher, 12: Nos. 1 and 2, September and October, 1911. Pp. 1-7, 53-59.

JOSEPHINE TOZIER. *An Educational Wonderworker. The Methods of Maria Montessori.* McClure's Magazine, May, 1911. Pp. 1-19.

JUNE E. DOWNEY. *Preliminary Study of Family Resemblance in Handwriting.* University of Wyoming, Department of Psychology, Bulletin No. 1, 1910. Pp. 51.

The revival of interest in the discussion of methods and particularly the methods of presenting common school subjects is a significant result of recent investigations in psychology and experimental pedagogy. The old questions which have given rise to such heated differences of opinion, because the answers proposed for them rested merely on opinion, are being taken up and re-examined with reference to the experimental evidence that can be brought to bear upon them.

Such is the purpose of Miss Thompson's résumé of psychological investigations which have a more or less direct bearing upon the problems of handwriting, and she has rendered a valuable service to many teachers in bringing together these widely scattered data, published in technical journals inaccessible to the average teacher, and presenting them in orderly fashion with emphasis on their pedagogical applications. For the specialist in psychology Miss Thompson has nothing new to offer. She has made no original researches, nor

does she attempt to set forth any novel theories. Her message is to the teacher and layman rather than to the psychological expert. An introductory chapter on the importance of writing is followed by an outline of the historical development of the alphabet. From simple devices to aid the memory, through object pictures and word pictures, to verbal, syllabic and alphabetic signs we follow the evolution of graphic symbols to represent conscious meanings. This historical sketch ends, however, with that form of the Latin alphabet which is now used in printing, and no effort is made to trace the development of the cursive characters through the middle ages to the present style of script used in handwriting.

The discussion of writing itself begins with an analysis of the neural activities underlying the act of writing, and the author gives a lucid summary of the views of Mosso, Flechsig, Exner and the position recently taken by Pierre Marie. The attitude taken on the agraphia question is fair and open, and it is pointed out that whether there is a writing center or not makes little difference, as connections must be formed with other parts of the cortex in any case. The experimental studies of Bryan and of Gilbert on rapidity of movement, of Woodworth on accuracy of movement, of Downey on sensory control, of Johnson on the effect of practice, of Judd and McAllister on movements involved in writing, and of Gesell on the relation between accuracy and intelligence are described in some detail, and in the final chapter on the pedagogy of writing the experimental results are passed in review once more,—now from the practical standpoint of the teacher. In this chapter a portion of Thorndike's scale has been incorporated. There is a bibliography of 44 numbers, and a good index.

Professor Thorndike's monograph marks an important step in advance, not only in the subject of handwriting, but in the methods of experimental pedagogy, and in the whole field of educational investigation. Heretofore assertions in regard to the value of a given method, or the improvement made by a group of pupils, have rested upon the casual observations of individuals frequently more or less biased. The quantity of the performance could be readily indicated, but there was no objective standard of measurement for the quality. Professor Thorndike undertook to devise a standard which should rest not on the interested judgments of a few but on the concensus of opinion of a large number of competent judges. Samples of hand-

writing were secured from several hundred pupils in grades V to VIII, and these samples were arranged according to quality in 20 different groups by each one of 30 or 40 competent judges. From the averages of these judgments a scale was constructed in such a manner that the points on it were equidistant from each other. The highest point of the scale was a copy-book model, and the lowest (which was rated quality 4 from an ideal zero point of just no writing at all) was very bad writing artificialy produced. To measure objectively the quality of a given sample of handwriting it is only necessary for several competent judges to compare it with the scale and to indicate independently the quality that it most resembles. Such a scale will, of course, not work automatically. Individuals will vary somewhat in their ratings. Yet it is surprising to note the agreement in the judgments of ten different observers, and the average will give a very accurate and constant determination. Even in the case of individual judgments it is of the greatest advantage to have some objective point of reference, so that the quality judgment described to others can be checked up later.

The monograph contains a detailed discussion of the method of constructing the scale, and sugggestions for its subsequent improvement. There is also a scale of six points for the quality of adult women's handwriting. As an illustration of the use to which the scale can be put, there is given in part II of the monograph a comparison of seven different school systems in the writing of seventh and eighth grade pupils. There are decided differences in the ratings when the quality is considered apart from the speed, but there is relatively little difference in quality at the same speed.

The author admits that the scale is not yet perfect. Few of the steps contain a sufficient number of different styles of writing. The scale should ultimately be extended upward to include samples of the writing of high school pupils, college students, business men, clerical workers, and profesional penmen, and downward to include samples of children's writing as low as the kindergarten. It would perhaps be advantageous if the steps of the scale were closer together. Such a need is felt especially in the middle region where most of the samples will fall. Again, more work should be done to determine the validity of the scale as already constructed. Would the results be the same if the samples were ranked by a group of business men, of bank tellers, or of professional penmen? What would

be the result if the samples were ranked on the basis of the rate at which they were read by a large number of competent readers, or on the judgment of ease of reading, instead of on the judgment of form? Other interesting questions might be raised which only further experimentation could answer. But the vista which is opened by this study is an extremely attractive one, particularly in view of the many possible applications of the method to other subjects. The reviewer is inclined to consider it one of the most noteworthy contributions to the science of experimental pedagogy during the past decade.

The first application of the Thorndike scale to the evaluation of the work of an entire school system was made by Supt. G. M. Wilson of Connersville, Indiana. Samples of "ordinary" writing were secured from all pupils and teachers of the school system from the first grade to the fourth year in the high school. The speed in number of letters per minute was computed for each of these samples, and they were rated for quality according to the Thorndike scale. The speed varied from 5 in the first grade to 211 in the high school, while the quality varied only from 9.2 to 11.8 (exclusive of teachers). It is surprising to find the quality so nearly the same in all the grades. Here and there a room was far in advance of others in the same grade, but the average quality lay between 9.9 and 10.4 from the second to the sixth grade, and between 11 and 11.8 from the sixth grade to the end of the high school. Why the sudden advance occurred just at the sixth grade is a question that remains unanswered. Nor does the author indicate under just what conditions the samples of "ordinary" writing were obtained. An attempt was made to answer the question how is quality affected by training for speed. The results with a 6A grade were as follows:

	Average speed (Letters per minute.)	Average quality (Thorndike).
Slow writing.....	46.8	14.95
Natural writing.....	73.1	14.66
Rapid writing.....	82.3	14.12

From this the conclusion is drawn that speed may be secured without any considerable sacrifice of quality. Unfortunately on account of the paucity of details it is difficult to evaluate these results.

On the basis of his own and other experiments Professor Freeman

discusses five questions in the teaching of writing. 1. Is vertical or slant writing to be preferred? Vertical writing has had the support of the hygienists, but there is no reason why a pupil should not sit in a hygienic position and still write a slant script. A free hand movement is only possible when the base line of writing is perpendicular to the forearm. But the easiest direction for the downward stroke is perpendicular to the edge of the desk. The combination of these two principles tells strongly against vertical writing and gives a physiological basis for the greater ease and rapidity of slant writing. 2. Should movement or form be the first to receive emphasis? The attempt to teach both together leads to a scattering of the attention which is objectionable. The results of drill in arm movement show little progress in the first three or four grades, but there is marked development in grades IV to VI. Therefore, the idea of the form of leters, which is fundamental, should be emphasized from the start, while strenuous drill in movement may well be postponed until the third or fourth grade. 3. Shall all the elements of the writing movement be trained at once? Perhaps it is well to take one component at a time, practicing finger movement, for example, at the desk, and arm movement at the blackboard, and uniting the two later. 4. Is it better to begin with sentences or with letters? The short sentence has more meaning for the child than the letter. At the same time the sentence should be quickly analyzed into its component elements, in order that the child may clearly distinguish the form of the separate letters. A combination of sentence and letter method is advantageous. 5. What form of movement is preferable, free arm movement, arm movement with rest (muscular movement), or finger movement? A combination of all three is advocated. Throughout the discussion the need for further experimentation is recognized.

Madam Montessori believes that children should be taught writing as a game between three and four years of age. She is a strong advocate of the development of the motor consciousness, and would begin by having the children trace with their fingers the form of the letters cut from coarse, black sandpaper and pasted on white cards. At the same time they are learning to read by forming words and sentences with these letters. Practice in holding the crayon is secured by filling in with colored crayons geometrical forms cut from cardboard and laid upon a sheet of paper. Later the children fill in the same

forms outlined with pencil. After six or eight weeks the child will have learned to write simple words and sentences, and when he once discovers that he can express his thoughts in writing he frequently evinces a perfect frenzy for it, and desires to write all the time. Excellent results are said to be secured by this method. After three months the children begin to use ink, and after six months most of them write as well as the average elementary third grade. How much of this account rests on the enthusiasm of the reporter only further tests can determine. Here would be an excellent opportunity to make use of Thorndike's scale with appropriate speed tests.

Professor Downey has made an interesting study of the factor of inheritance in the form of handwriting. Notwithstanding the approximation to conventional letter forms which results from the formal teaching of writing there is a tendency to lapse into characteristic styles of writing which frequently show striking resemblances to the handwriting of others in the same family. These resemblances can be explained only on the basis of family relationship, for all other factors, as training, environment, etc., may be different. The author says further that there is strong indication of the appearance in families of definite handwriting types, between which there may otherwise be great dissimilarity. If these inherited tendencies were more carefully studied and better known they might be of value to the teacher in her efforts to deal with the individual pupils in her charge.

J. C. B.

FREDERICK ARTHUR HODGE. *John Locke and Formal Discipline.* (Doctorate thesis, University of Virginia), Lynchburg, Va., J. P. Bell Co., Inc., 1911. Pp. 31.

Locke has been frequently cited as offering support in his philosophy for the doctrine of formal discipline. Dr. Hodge presents a reinterpretation of Locke's position. In the first place, he argues that the doctrine in question is a corollary of the doctrine of innate ideas, so that Locke, in his attack upon innate ideas, strikes at the foundation of the doctrine of formal discipline. Again, Locke is commonly held to be an advocate of a faculty psychology, yet the author believes that "in so far as formal discipline rests upon the faculty psychology, the empirical psychology of Locke offers it no support." Locke's views of the disciplinary character of logic and mathematics are also cited by some writers as evidence of

his support of formal discipline. The author argues, however, that Locke's statements must always be interpreted in the light of his system as a whole, and that, when thus interpreted, it appears that Locke "would have all men study mathematics because of a certain method used therein." But most opponents of the dogma of formal discipline are ready to admit that certain "concepts of method" may be derived from the pursuit of certain studies and that these concepts may carry over into other fields of mental activity.

In summary, the author concludes: "First, that Locke's philosophy and psychology furnish no basis for the dogma in question. Second, that he sought to set aside the limited curriculum based on the disciplinary conception of his time and substitute for it a broader curriculum. Third, that he urged the abolition of abstract rules and generalizations in favor of concrete specific experiences. Fourth, that Locke's various references to education as a discipline may best be interpreted in the light of *Specific Disciplines* and *Concepts of Method* and such interpretation is consistent with his philisophy."

Cornell University. ROY C. HOLL.

WILLIAM P. TRENT, OLIVER HUCKEL, JOHN PRENTISS POE, LIZETTE WOODWORTH REESE, AND MRS. JOHN C. WRENSHALL. Edited by Heinrich Ewald Buchholz. *Edgar Allan Poe: A Centenary Tribute.* Baltimore: Published for the Edward Allan Poe Memorial Association by Warwick & York, Inc., 1910. Pp. 102. Bound in buckram, $1.50.

In this interesting volume the tragic story of America's most original poetic genius is presented from several different points of view. Not only during his lifetime but long after his death it has been Poe's fate to stir up the bitterest controversies between his ardent and enthusiastic admirers and his relentless and implacable detractors. Dr. Trent gives a masterful account of this struggle for recognition, shows how much earlier and more justly Poe was appreciated abroad than at home, and points out the reasons why the poet's type of mind was necessarily antagonistic to the New England influences then dominant to American literature. But of late years a more dispassionate attitude is evident, and the lines along which Poe's life and work will continue to claim attention are gracefully and succinctly set forth.

Dr. Huckel gives a warm-hearted appreciation of the unique genius

of Poe's poetry, and his kinsman, John Prentiss Poe, brings together the tributes of leading men of letters to the poet's pesonality. One of the most attractive chapters in the book is Mrs. Wrenshall's "Sketch of the Life of Edgar Allan Poe from the Testimony of His Friends." A feature of the work is the large number of portraits of the poet, and the photographs of his monument in Westminster Churchyard.

PETER STERLING.

Modern Schoolhouses, City and Suburban. New York: The Sweetland Publishing Co., 1910.

This admirable work consists of a series of compact and authoritative articles upon the important aspects of schoolhouse planning, sanitation, heating and ventilation, and a rich collection of illustrative material covering about 150 pages. These illustrations include the best examples of modern school architecture, from the four-room suburban building to the largest and most complex plant for the housing of city high, technical or normal school. The collection is further enriched by a large number of plans, working drawings and descriptions, many of which are first published in this volume.

The following quotation from the preface is a fair and accurate statement of the character of the book:

"In the selection of schoolhouses gathered together in this volume will be found a fair representation of the most recent developments in their planning, architectural handling, and mechanical equipment. The articles likewise have been chosen to cover the subjects in the broadest manner and without unduly accenting any one type, material, process or device over another that may possess equal merit for other conditions."

With respect to the illustrative material, it is sufficient to say that it is the most practically valuable collection of plates relative to school architecture to be found in any single volume. The textual matter is limited in scope and extent—much less comprehensive than the older works of Wheelwright, Briggs and Clay—but this is compensated for by quality and compactness.

The articles are written by men who, during the past 20 years, have *created* school architecture. The article by Professor Hamlin of Columbia on "Considerations in Schoolhouse Design" is singularly clear, comprehensive and right in its contentions.

HIGAN STATE NORMAL COLLEGE
TRAINING SCHOOL DEPARTMENT.

The illustrations are triple indexed—general, by location and by architect.

The book is invaluable to architects, sanitarians, school boards and superintendents. W. S. SMALL.

Eastern High School, Washington, D. C.

FLETCHER B. DRESSLAR. *American Schoolhouses.* Washington: Bureau of Education, Bulletin 444, 1911. Pp. 133.

This is a monograph which should be of great value to school boards, school architects and others who have to do with planning school buildings. But it is not to the technical man alone that the book will appeal. The greater part of its bulk is due to the 267 plates, most of them full page, many of them even double page, which represent pictorially and by means of floor plans the latest and best in American school architecture and equipment. These speak directly even to the uninitiated.

The author says in his foreword that this is not a treatise on school hygiene, yet those points of school hygiene that depend on the construction of the school building find here a simple, direct and untechnical treatment which is of more value than most of the formal treatises. For example, the best and most economical means of securing foundation walls free from moisture are briefly indicated, the most advantageous arrangement of rooms is carefully canvassed and the different types profusely illustrated with excellent photographs, the desirability of school baths even in country schoolhouses is cogently set forth, and the heating and ventilation of schoolrooms receive concise but practical and helpful consideration. An appendix on "Types of Modern Schoolhouses" emphasizes some of the salient points in present tendencies of construction, and a good index makes the monograph usable for reference. PETER STERLING.

NOTES AND NEWS.

THE BINET-SIMON TESTS.

No other scheme of mental measurement has attracted so general interest in a short time as the Binet-Simon tests. Much valuable effort is now spent profitably in trying out and criticising them. But it may be safely predicted that the very feature which at present seems to be the essential, namely the determining of the mental age of a child, will be largely lost in the process of refining the tests. It is strange that the many keen critics who are now working on the problem have not grasped the fact or, at any rate, have not dealt with it further than the original authors have.

Retardation does not follow a common, flat level any more than growth does, nor even nearly so much. A child develops one capacity several times as fast, and often at the expense of another faculty. This differentiation is even more striking in retardation. What is more, those who employ the tests for practical purposes should not be satisfied with a flat mental age, except for the purpose of rough classification, *e. g.*, to determine whether or not a child is feeble-minded. In the study of the normal individual we seek to discover his fortes and his faults, in short, to discover his particular deviation from the norm of the common level. There is no reason why the Binet-Simon tests should not develop into specific measures of the relative rank, or age if you please, of more specific capacities and powers, such as reasoning ability, sensory observation, memory, imagination, initiative, emotional life, self-control, etc. A child may be at the mental age of six in one capacity and 12 in another, and the important thing to know about the individual is this difference and direction of unsymmetrical development. It may be that a general flat age test must be retained for certain purposes, but even that must be interpreted in the light of measures of specific capacities. Only by extension in recognition of this principle can any set of tests be of permanent value in orthogenics.

C. E. S.

PRECOCITY AND EDUCATION.

During the past year or two much space has been devoted in the popular prints to the feats of certain precocious youngsters in various parts of the country, and on the basis of these glowing accounts many valiant attacks have been made upon the work of the schools as not only inadequate and inefficient but positively stultifying. In a recent number of *Science* (November 17) Professor O'Shea has taken up the challenge and has broken a lance in defense of the schools. Professor O'Shea has rendered a service in pointing out the fact that in spite of the many tales that are told, there is no careful and trustworthy record of precisely what these young people are able to do. This is most unfortunate, and should be remedied, both in the interests of scientific accuracy, and in order to establish standards of possible pedagogical attainment. Professor O'Shea notes that it is fairly easy to train very young children to go through the form of pronouncing selections from Shakespeare or Emerson, or making a show of algebraic formulæ, but this may be far from reading or mastering mathematics in the adult sense. But has he not missed the crucial point in the significance which these exceptionally gifted children (if they are such) have for general pedagogical procedure? It may be true that from the standpoint of pure precocity the average two-year-old, with his vital knowledge of living and inanimate things, far surpasses the manikin who can juggle with words or apply geometrical formulæ to particular problems. But may not the two kinds of knowledge co-exist in the same person? Surely they are not mutually exclusive. And would it not be a decided gain if instead of occupying himself with mere aimless activity the young child could under the guise of play master the mechanics of reading, writing and number combinations, so that he would have these tools at hand for the more important work of thinking? The claim is made for the precocious children that they have merely been encouraged to advance as rapidly as they wished. Shall we call this "forcing"? If so, would it not be desirable to have more of it in the schools? A thoughtful public school man of our acquaintance prefers to send his seven-year-old son to private school because there the boy does all the work accomplished in the public schools in one-half the time, and thus is not so apt to form habits of idling away his time in school. It is seldom that a child is encouraged to do his utmost in the lower grades of the public school. There is too much routine for that. Whether any

other condition of affairs is possible in our large school systems with classes of 50 and 60 pupils is a question for the future.

J. C. B.

On Friday and Saturday, December 1 and 2, the National Association for the Study and Education of Exceptional Children held its second annual conference on the problem of the exceptional child at New York University and the Society for Ethical Culture, New York City. The topics discussed were "Causes of Exceptional Development in Children," "Educational Needs of the Various Kinds of Exceptional Children" and "The Exceptional Child as a Social Problem."

Dr. Edmund B. Huey, who has for some time been making examinations of defective children and of aphasic patients at the Johns Hopkins Hospital, has been appointed lecturer in mental development in the Johns Hopkins University and assistant in psychiatry in the Phipps Clinic of the Johns Hopkins Hospital. From January to June, 1912, Dr. Huey will give, at the university, a series of weekly public lectures and clinics on the subject of backward and feeble-minded children, and on related phases of clinical psychology.—*Science.*

Dr. Anna J. McKeag, head of the department of education in Wellesley College, has accepted the presidency of Wilson College (Chambersburg, Pa.), and will assume the duties of her new position on February 1. Miss McKeag will retain the work in education at Wilson College, and hopes to make that department a vital force in the work of the institution and a powerful influence in the educational life of the Middle States. Miss McKeag's work in Wellesley will be continued by Dagny N. Sunne, Ph. D., formerly of the Woman's College of Alabama, who has been appointed instructor in the history and principles of education for the second semester.

Dr. Eleanor Harris Rowland, associate professor of philosophy and psychology, Mt. Holyoke College, has resigned to become dean of women at Reed College, Portland, Oregon.

Dr. John B. Watson, professor of experimental and comparative psychology, Johns Hopkins University, will give courses at the summer session of Teachers' College, Columbia University, in 1912.

CURRENT PERIODICALS.

(In this section only such articles will be noticed as bear directly or indirectly upon the interests of this Journal.)

ZEITSCHRIFT FUER PSYCHOTHERAPIE UND MEDIZINISCHE PSYCHOLOGIE. Vol. III, 1911. No. 1. ALBERT MOLL. *The Treatment of Sexual Perversions, with Especial Emphasis on Association Therapy.* 1-28. An outline of prevailing methods of treatment is followed by a plea for a psycho-pedagogical method which will gradually substitute normal, healthy images for the perverse ones, and build up a system of normal associations in the consciousness of the unfortunate patient. No. 3. PAUL GAEDEKEN. *On the Psycho-Physiological Significance of Atmospheric Conditions, with Special Reference to Light.* 129-157, 206-235. An extended contribution to the subject of periodicity and seasonal changes. No. 4. GUSTAV MAJOR. *Institutional Education and the Treatment of Defectives.* 193-206. Of 170 children that have recently come under the care of the Berlin Child Welfare Society, 143, or almost 80 per cent., were in some sort mentally defective. The author declares that every defective psychopathic constitution contains within it a tendency to criminality. Many of these defectives, if given institutional care and training, could be rendered useful members of society instead of developing into criminals.. No. 5. TH. HOEPFNER. *Psychological Considerations on Stuttering and Speech. A Contribution to the Aphasia Question.* 264-289. The author claims that a particular, sense-destroying, meaningless linguistic error is a sign of peculiar associational relationships, and not of a weakness in the neural basis of speech. Every stutterer suffers from a momentary aphasia, but this aphasia depends wholly upon surrounding conditions which inhibit the normal linkage of associations. When the stutterer stutters he only does what he thinks.

PUBLICATIONS RECEIVED.

(Notice in this section does not preclude a more extended review.)

FELIX ARNOLD. *Outline History of Education.* New York: The Bay Press, 1911. Pp. 109.

The book begins with a discussion of contemporary movements in education, and works back to the more remote periods. It would be a convenient aid for rapid review.

C. W. BARDEEN. *Tom and Tom Tit and Other Stories About Schools.* Syracuse, N. Y.: C. W. Bardeen, 1911. Pp. 286. $1.00.

Six stories of school life by the editor of the *School Bulletin,* in a vein similar to his half-dozen other books of stories about teachers and schools. Written in an unpretentious, yet realistic style, these stories are full of commonsense and convey in an unobtrusive manner many hints and suggestions of value to the classroom teacher.

Bibliography of Education for 1909-1910. Washington: Bureau of Education, Bulletin 456, 1911. Pp. 166.

FRANZ BOAS. *The Mind of Primitive Man.* New York: The Macmillan Company, 1911. Pp. 294. $1.50 net.

This important book embodies the author's lectures before the Lowell Institute and the National University of Mexico, 1910-1911, and includes in revised form several of his earlier essays. It treats of racial prejudices, influence of environment and heredity upon human types, the mental traits of primitive and of civilized man, race and language, the evolution of culture, and concludes with a discussion of race problems in the United States. The treatment is argumentative and would be difficult for normal school or college students, though useful for reference in classes studying mental development.

DR. ED. CLAPARÈDE. *Psychologie de l'Enfant et Pédagogie expérimentale.* (Fourth edition, revised and extended.) Geneva: Librairie Kündig, 1911. Pp. 471.

The English translation of this edition, under the title "Experimental Pedagogy and the Psychology of the Child," has been annotated in the November issue.

S. A. COURTIS. *The Comparative Test as an Educational Ruler.* Reprinted from American Education, 1911. Pp. 13-18.

An able plea for the more extended use of measurements in education. The author has cleverly expressed the results of a number of recent experimental studies in the form of curves.

GEORGE V. N. DEARBORN. *The Neurology of Apraxia.* Reprinted from the Boston Medical and Surgical Journal, 164: No. 22, June 1, 1911. Pp. 783-786.

A study in the neural basis of voluntary movements. Apraxia is defined as "an incapacity for subjectively purposive movements, with conservation of the power of movement."

FRANCES DENSMORE. *Chippewa Music.* Washington: Government Printing Office, 1910. Pp. 216.

A very valuable first hand study.

EDWARD A. FITZPATRICK. *The Educational Views and Influences of De Witt Clinton.* New York: Teachers' College, Columbia University, 1911. Pp. 157. $1.50.

A valuable contribution to the history of education in New York State.

KARL GROOS. *Das Seelenleben des Kindes.* (Third edition, revised and enlarged.) Berlin: Reuther und Reichard, 1911. Pp. 334. M. 4.80.

The fact that a new edition of this work has been called for so soon attests its popularity with German readers. The second edition was reviewed in this JOURNAL, Vol. II, p. 40.

MAXIMILIAN P. E. GROSZMANN, PD. D.. *The Career of the Child from the Kindergarten to the High School.* Boston: Richard G. Badger, 1911. Pp. 335. $2.50 net.

This book has an introduction by F. E. Bolton, covers ambitiously a wide range of topics, "contains a complete system of suggestions for the entire career of the elementary school, such as can be almost immediately adjusted to various local conditions," and is advertised to be "without question, the most valuable contribution yet made to the intelligent study of the education of the child." We have not had time to verify this claim, but we note that the print is unpleasantly small, that the references, where any are given, are thrown together in a helter-skelter manner, and that there is no index.

EDWARD JOHN HAMILTON. *Perzeptionalismus und Modalismus.* Leipzig: Dr. Werner Klinkhardt, 1911. Pp. 115.

A translation of an epitome of the author's system of philosophy.

FREDERICK ARTHUR HODGE. *John Locke and Formal Discipline.* Lynchburg, Va.: J. P. Bell Co., Inc., 1911. Pp. 31.

Reviewed in another section.

H. E. JORDAN. *The Inheritance of Left-Handedness.* Reprinted from American Breeders' Magazine, 2: 1911, Nos. 1 and 2.

On the basis of a questionary canvas of 700 university students,

1394 white and 668 colored public school children, he finds about 2.5 per cent. of left-handedness in the whites, but 4.3 per cent. in the negroes. No sex differences appeared. In the second group the ratio of right-handed to left-handed persons in the affected families was 1 to 2, in the third group, 29 to 25. The evidence, therefore, favors the view that left-handedness is hereditary. A further and more detailed study, to include other matters of educational interest, is promised.

HARRY PRATT JUDSON. *The Higher Education as a Training for Business.* Chicago: The University of Chicago Press, 1911. Pp. 56. Cloth. Postpaid, 55 cents.

Higher education teaches the value of money and its use, and trains honesty, industry, mental grasp, adaptation to society, and the enjoyment of wealth.

HARRY EDWIN KING. *The Educational System of China as Recently Reconstructed.* Washington: Bureau of Education, Bulletin 462, 1911. Pp. 105.

This discussion of the Chinese school system by the vice-president of Peking University may be considered authoritative. It contains a historical sketch of Chinese education to 1909, an account of the controlling agencies of the educational system, and a description of elementary, secondary and higher educational agencies recently established. In these days of the reawakening of China it is of great interest to have portrayed for us those undercurrents of educational influence which made the present movement possible.

ARMAND LAURENT. *De l'Hygiéne Pré-Scolaire au point de vue de L'Arriération Mentale.* Paris: Henry Paulin & Co., 1911. Pp. 42 1 fr. 50.

Outline of a practical program given as a "charge" to the *Société Normande d'Hygiéne.*

ARMAND LAURENT. *Quelques Mots sur L'Arriération Mentale.* Rouen: Imprimerie J. Girieud, 1909. Pp. 28.

A good discussion on the classification and treatment of the *Arriérés.*

E. B. LOWRY, M.D. *Herself: Talks With Women Concerning Themselves.* Chicago: Forbes & Co., 1911. Pp. 221. $1.00.

By the author of *Confidences* and of *Truths* (reviewed in this JOURNAL, October, 1911), written to fill the need of a book for women on matters of sex. Its 25 chapters cover a wide field, *e. g.,* anatomy, physiology and pathology of female genital organs, fake medical advice, sterility, abuse, abortions, divorce and the marriage relation, flirtation, white slavery, the business woman, the nervous woman,

sex instruction of boys and girls, etc. The style is lucid and attractive and many sections are impressive. Parental influence (pp. 97-8), however, is treated neither clearly nor accurately.

O. S. Marden. *Pushing to the Front.* Petersburg, N. Y.: The Success Company, 1911. Pp. viii, 824.

This is a book that tells boys just how to go about it to win success in life. Through 66 chapters the author reiterates the world's stock of time-worn platitudes, vitalizing them by innumerable concrete illustrations taken mainly from biography. If the book only possessed an index it would be a useful compendium for the teacher or lecturer who is constantly in need of illustrative anecdotes. This defect, however, will not prevent it from meeting a definite need in education. The commonplace truths must be brought home afresh to each generation, and, in spite of contemporary tendencies to laugh explicit moral instruction out of court, it cannot be denied that books of this type make an effective appeal to the adolescent mind and have their sphere of usefulness.

Ernst Meumann. *Vorlesungen zur Einführung in die Experimentelle Pädagogik und ihre psychologischen Grundlagen.* Volume I. Second edition, revised and enlarged. Leipzig: Engelmann, 1911. Pp. xix, 725. M. 9. Geb. M. 10.25.

Meumann's Experimentelle Pädagogik has taken rank as the most authoritative presentation of the aims and methods of the new science of experimental pedagogy. The first edition has been out of print for some time. In the second edition the work will be enlarged to twice its former size, and will consist of three volumes instead of two. Especial emphasis is laid upon the exposition of the methods and technique of pedagogical experimentation. Volumes II and III are in preparation and are promised for the immediate future.

Max Offner. *Das Gedächtnis. Die Ergebnisse der experimentellen Psychologie und ihre Anwendung in Unterricht und Erziehung.* Second edition, enlarged. Berlin: Reuther und Reichard, 1911. Pp. ix, 258. M. 3.50.

This book, the first edition of which was soon exhausted, has received the highest commendation from German reviewers for its clear arrangement and its intelligible presentation of the results of recent experimental work on memory. The author avoids physiological explanations, and bases his discussion on the theory of psychic dispositions.

Wilhelm Peters. *Gefühl und Erinnerung. Beiträge zur Erinnerungsanalyse.* Reprinted from Kraepelin's Psychologische Arbeiten, Bd. 6: Heft 2, 1911. Pp. 197-260.

This interesting study attacks the problem of the feeling tone of

memories as compared with the feeling tone of the original experiences. Of the affective experiences recalled two-thirds were agreeably toned in the original experience. More remote experiences showed a higher proportion of agreeably toned cases than recent ones. Only half of the memories showed any affective tone, and of these almost two-thirds were agreeable. Of the agreeable experiences 55 per cent. retained the same feeling tone as memories, while 32 per cent. became indifferent. Of the disagreeable experiences 49 per cent. retained the same tone in memory, and 43 per cent. had become indifferent. There is thus a somewhat greater tendency for disagreeable experiences to become indifferent than for agreeable experiences.

L. G. Powers and W. S. Small. *Standard Form for Reporting the Financial Statistics of Public Schools.* Washington: Bureau of the Census, 1911. Pp. 28.

"The purpose of this monograph is to present to the fiscal officers of the public schools a practicable, uniform method of accounting. The adoption of such a uniform system of accounting and reporting will greatly facilitate the collection of the financial statistics of schools and materially reduce the cost of same. It will also make possible a comparison of the efficiency and economy of school systems, and will furnish a basis for a more intelligent study of school administration than has been possible heretofore." Copies of the form are to be had on application to the Census Bureau. It is unfortunate that the Census Bureau and the Bureau of Education did not come to an agreement on a form for financial statistics.

William Carl Ruediger. *Agencies for the Improvement of Teachers in Service.* Washington: Bureau of Education, Bulletin 449, 1911. Pp. 157.

"Agencies for the improvement of teachers in service are needed primarily for three reasons: (1) Because many teachers enter the profession relatively untrained and therefore need to be trained in service, if at all; (2) because complete training is impossible before active service begins, for the reason that the necessary basis for it is not at hand; and (3) because teaching is a progressive calling, in which one who does not continually make efforts to go forward will soon lag behind and become relatively inefficient." Among the topics discussed are teachers' institutes, summer schools, extension teaching, correspondence study, teachers' meetings and reading circles, and the merit system of promotion.

Sante De Sanctis. *Frenastenici e anormali psichici.* Reprinted from Rivista Ospedaliera, 1911, No. 10. Pp. 15.

The defective child presents a three-fold problem: Medical, scholastic and social. In order to secure an advantageous approach to the problems involved, a classification of defectives is necessary. The

author purposes a classification into five groups, according to the degree of deviation from the normal. He does not suggest names for these groups, but shows that in each group would be found cases which have been called by many different names, depending on the point of view from which the cases have been considered.

GEORGE DRAYTON STRAYER. *Age and Grade Census of Schools and Colleges. A Study of Elimination and Retardation.* Washington: Bureau of Education. Bulletin 451, 1911. Pp. 144.

This valuable study is based on a census of 318 school systems taken in the first week of December, 1908, in accordance with an age grade blank sent out by the bureau of education. The complete tables of registration are given, and from these the frequencies of retardation and advancement, and the percentages of the largest age groups in the different grades have been plotted.

HARLAN UPDEGRAFF. *Teachers' Certificates Issued Under General State Laws and Regulations.* Washington: Bureau of Education, Bulletin 465, 1911. Pp. 269.

An elaborate compilation of the regulations for entrance to the teaching profession.

JAMES H. VAN SICKLE, LIGHTNER WITMER AND LEONARD P. AYRES. *Provision for Exceptional Children in Public Schools.* Washington: Bureau of Education, Bulletin 461, 1911. Pp. 92.

This valuable monograph gives a clear and concise account of the provisions made for exceptionally dull and specially gifted children in the United States. The most important chapters discuss the discovery of the exceptional child, proportion of exceptional children, classification, methods of determining retardation, plans of grading and promotion, and a detailed account of conditions by school systems.

NIXON WATERMAN. *"Boy Wanted."* Chicago: Forbes and Company, 1911. Pp. 134. $1.25. *The Girl Wanted.* Same, 1912. Pp. 158. $1.25.

These two books of "cheerful counsel" and "friendly thoughts" are very interesting attempts to proffer ethical precepts in such a guise that boys and girls will read them willingly and profitably. The first deals with such topics as self-made men, genius, industry, opportunity, over and underdoing, the value of spare moments, cheerfulness and practicability; the second with such topics as choosing the way, accomplishments, everyday virtues, golden habits, the purpose of life, etc. The plan in each book is to give two-thirds of each page to the author's text and the remainder to pertinent quotations from the world's best authors. The books are attractively illustrated and artistically gotten up.

GUSTAV GOTTLIEB WENZLAFF. *Teachers' Handbook of Psychological Principles.* New York: Charles E. Merrill Co., 1910. Pp. 39.

This is one of the misguided attempts to skim the cream off the science of psychology to lubricate the path of the teacher. The result does harm both to psychology and to the teacher.

GUSTAV GOTTLIEB WENZLAFF. *The Mental Man: An Outline of the Fundamentals of Psychology.* New York: Charles E. Merrill Co., 1909. Pp. 272.

The ideal text-book of psychology for teachers has not yet been published. The present work is an attempt to popularize the material which is to be found in any first-class text-book of physiological psychology, and will doubtless meet with considerable favor. The student must be considered unfortunate, however, whose idea of psychology rests upon such presentations as this.

WILLIAM PARKER WHARTON, A. M. *Experimental Study of Ideational Types of School Children on the Basis of Ten Different Methods.* New York: Published by the author, 1911. Pp. 120.

The author of this "thesis submitted in partial fulfillment of the requirements for the doctorate in philosophy in New York University" has done an excellent piece of work in subjecting the various methods of determining ideational types to a critical, comparative test on school children. The methods tested were Kraepelin's and Secor's word methods, Binet's and Cohn's methods of letter squares, Washburn's and Meumann's distraction methods, Meumann's method of helps, Pedersen's dictionary method, and Seashore's and Netschajeff's methods of securing the pupils' introspection on their own mental types. The tests were made on upper elementary and high school pupils. No pronounced mental types were discovered, and the tendencies found in one test were contradicted by those revealed by another. The conclusion is expressed that there is no reliable method for determining the imagery of children.

LOUIS N. WILSON. *Bibliography of Child Study for the Years* 1908-1909. Washington: Bureau of Education, Bulletin 457, 1911. Pp. 84.